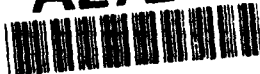


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1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 11/00/88		3. REPORT TYPE AND DATES COVERED	
4. ROCKY MOUNTAIN ARSENAL , NORTH BOUNDARY CONTAINMENT/TREATMENT SYSTEM, OPERATIONAL ASSESSMENT REPORT, FY87, FINAL REPORT				5. FUNDING NUMBERS	
6. AUTHOR(S) THOMPSON, D., DILDINE, J., FRANCINGUES, N.				8. PERFORMING ORGANIZATION REPORT NUMBER 89263R01	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) ARMY ENGINEER WATERWAYS EXPERIMENT STATION				10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) ROCKY MOUNTAIN ARSENAL (CO.). PHRMA				11. SUPPLEMENTARY NOTES	
12a. DISTRIBUTION / AVAILABILITY STATEMENT APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED				12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) THIS REPORT WAS PREPARED TO DOCUMENT AND ASSESS THE STATUS AND OVERALL OPERATIONAL PERFORMANCE OF THE NORTH BOUNDARY CONTAINMENT/TREATMENT SYSTEM. IT COVERS THE PERIOD OCTOBER, 1986, THROUGH SEPTEMBER, 1987. THE OBJECTIVES OF THE REPORT INCLUDE: 1. ASSESS THE CONTINUING EFFECTIVENESS OF THE NORTH BOUNDARY SYSTEM IN PREVENTING OFF-POST MIGRATION OF CONTAMINATED GROUND WATER 2. DOCUMENT SYSTEM OPERATING PARAMETERS 3. IDENTIFY AND DOCUMENT SYSTEM IMPROVEMENTS, FIELD STUDIES, AND FACILITY ALTERATIONS CONDUCTED DURING FY87 4. IDENTIFY AND DOCUMENT OPERATIONAL IMPROVEMENTS THAT WILL ENHANCE LONG-TERM EFFECTIVENESS. APPENDICES INCLUDE: 1. GEOLOGIC AND HYDROLOGIC PLATES 2. PLANT FLOW DATA					
14. SUBJECT TERMS GROUNDWATER				15. NUMBER OF PAGES	
				16. PRICE CODE	
17. SECURITY CLASSIFICATION UNCLASSIFIED		18. SECURITY CLASSIFICATION OF THIS PAGE		19. SECURITY CLASSIFICATION OF ABSTRACT	
				20. LIMITATION OF ABSTRACT	

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**ROCKY MOUNTAIN ARSENAL
NORTH BOUNDARY CONTAINMENT / TREATMENT SYSTEM
OPERATIONAL ASSESSMENT REPORT**

FY87

FINAL REPORT

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**Technical Operations Division
Program Manager, Rocky Mountain Arsenal
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November 1988

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EXECUTIVE SUMMARY

Introduction

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This report is the third in a set of reports prepared to document and assess the status and overall operational performance of the North Boundary Containment/Treatment System (NBS). The report consists of one volume with appendices. The report covers the operating period from October 1986 to September 1987 (fiscal year (FY) 1987).

Monitoring Activities

Ground Water

The FY 87 ground-water monitoring program was a continuation of the previous years boundary system monitoring program. Water levels were monitored and water quality samples were collected on a quarterly basis for FY 87. New wells and borings were drilled to provide additional data. The chemical analysis and water level data are maintained on the PMRMA computer system and the Rocky Mountain Arsenal Information Center (RIC) computer. These data bases are the official record and were used as the primary source of information for the ground water assessments.

Plant Operations

The treatment plant monitoring program included collection of data on flow quantities through the system and on quality of the water entering and leaving the plant. Flow data are collected on a daily basis and a log of plant operations is also maintained daily. The quality of the plant's influent and effluent was monitored by taking water samples each week and analyzing them. Samples were also collected from the dewatering wells on a quarterly basis and analyzed.

Summary of Operational Effectiveness

The North Boundary system was designed to capture and remove ground-water organic contaminants (DIMP, DBCP, DCPD, aldrin, dieldrin, endrin and organo-sulfurs) to below maximum operating levels (see Table 4, page 17), so that ground water down gradient of the system would not contain concentrations of

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of contaminants in excess of acceptable levels (standards and criteria where available). It is emphasized that the system was designed to contain and treat all of the ground water flowing in the alluvium off the North Boundary of RMA. In order to evaluate the system's ability to intercept and control ground-water flow, and to treat the contaminants in this flow to an acceptable level, a system operational assessment was performed.

Ground-water Flow and Elevations

Ground-water flow in FY 87 continued to follow historical patterns described in a previous report (Thompson et al., 1985). The flow is generally within the buried stream valley through sections 23 and 24. The ground-water flow approaching the North Boundary System is approximately 230 gpm. The ground-water levels upgradient of the NBS during FY 87 continue the gradual decline of FY 85-86. This trend implies that the system flow rate of 250 gpm is somewhat exceeding ground-water flow toward the system.

The NBS recharge continues to be less than optimal in achieving the desired distribution of ground water north of the barrier. This condition is reflected in the variability of the ground-water levels immediately north of the system.

Contamination Control Operations

The distribution of compounds assessed in previous reports (PMRMA, 1987), including DIMP, DCPD, DBCP, combined organo-sulfurs, chloride, and fluoride exhibited a similar pattern for FY 87, even though the monitoring network was different (ESE 1988). The contaminant distribution pattern appears to follow several transport pathways but are not limited to just these pathways. The highest contaminant concentrations were generally detected in samples from the wells located along these major pathways.

ESE (1988) concluded that the samples from the monitoring wells at the boundary of RMA exhibited generally lower levels of contamination than samples from wells upgradient of the recharge wells. Contaminant concentrations over time assessed in a group of offpost wells indicate that DIMP and DBCP concentrations in the offpost area downgradient of NBS have declined since 1978.

Contaminant Concentration in Dewatering Wells

Based on the contaminant concentration data collected for the dewatering wells during FY 86-87, it appears that the highest concentrations of contaminants are generally found along the western half of the control system

in the area of the original NBS. In general, the contaminant distributions did not change significantly over the two year period. Maximum contaminant concentrations were found in the area during each sampling period. None of the concentration trends were of a magnitude to indicate any significant changes in the ground-water contamination along the control system.

System Reliability

The operational performance of the treatment plant has improved greatly over the past two years. Downtime for repairs has been significantly reduced. The recharge wells were cleaned during the first quarter of FY 87 to improve the systems ability to reinject treated water north of the containment barrier. The major alteration to the NBS during FY 87 involved the installation of bag-type effluent filters to the treatment plant. The filters were installed in May 1987 to improve filtering efficiency by improving the removal of carbon fines from the plant effluent.

Conclusions

The NBS is intercepting essentially all of the alluvial ground-water flow moving toward it. During the FY 87 time frame, ground water flow continues to follow the same patterns described by Thompson et al. (1985). The flow is primarily within the buried stream valley through Sections 23 and 24. Most of the contaminant plumes are associated with this ground-water flow. Based upon the data collected from the dewatering wells, the highest concentrations of contaminants are generally found along the western half of the control system in the area of the original NBS. The contaminant distributions do not vary greatly over the two year period. Concentrations of some contaminants increased while others decreased during FY 86 and FY 87, however, none of the trends were of significant magnitude.

The treatment system is effectively removing organic contaminants from the influent to the system. The ground water being recharged contains levels of organic contaminants generally below detectable levels. Inorganic contaminants such as chloride and fluoride are not being treated. However, treatment plant influent/effluent are monitored for fluoride and chloride and by proper control of influent streams, the effluent fluoride concentration is maintained below EPA's maximum concentration level of 4.0 ppm secondary drinking water

standard at all times, and the effluent chloride concentrations is, on an average basis, below EPA's 250.0 ppm secondary drinking water standard (see Table 4, p. 17).

Ground-water levels upgradient of the NBS during FY 87 continue the gradual decline of FY 85-86. Precipitation does not significantly affect water levels indicating that the system flow rate of 250 gpm is somewhat exceeding ground-water flow toward the system. Based on lower FY 87 ground-water levels upgradient of the NBS, flow toward the system is approximately 230 gpm.

The NBS recharge continues to be less than optimal in achieving the desired distribution of ground water north of the barrier. This condition is reflected in the variability of the ground-water levels immediately north of the system.

PREFACE

This study was conducted as part of a cooperative effort by personnel from the Technical Operations Division (TOD) of the Program Manager for Rocky Mountain Arsenal (PMRMA) and the U. S. Army Engineer Waterways Experiment Station (WES). Funding for participation by WES was provided by the Program Manager, Rocky Mountain Arsenal via Intra-Army Order No. 88-R-2. Mr. Brian L. Anderson served as Project Coordinator for TOD. Project management was provided by Messrs. David W. Strang, TOD, Norman R. Francingues, WES Environmental Laboratory (EL) and James H. May WES Geotechnical Laboratory (GL).

This study is part of a continuing assessment of the operational status of the North Boundary Containment/Treatment System at Rocky Mountain Arsenal (RMA). Previous work has been reported in the report entitled "North Boundary Containment/Treatment System Performance Report" Vols I and II, by Douglas W. Thompson, Edwin W. Berry, Brian L. Anderson, James H. May, and Richard L. Hunt, December 1985, that addressed the system operations during FY84 and "Rocky Mountain Arsenal North Boundary Containment/Treatment System Operational Assessment Report" Vols I, II, and III, June 1987, that addressed system operation during FY85 and FY86.

The contributing authors to this report were Messrs. Douglas W. Thompson, Jack H. Dildine, Norman R. Francingues (WES-EL) and Paul Miller and William Murphy (WES-GL). The report was prepared under the direct supervision of Mr. David W. Strang (TOD), Mr. Norman R. Francingues (WES-EL) and Mr. James H. May (WES-GL). The study and report were authorized by the Program Manager, Rocky Mountain Arsenal, COL Wallace N. Quintrell.

The authors acknowledge the support and assistance of the following people and organizations during this study: Mr. Bennie Washington, WES, Mr. Jack Pantleo, Mr. Jim Clark and Ms. Dianna Reynolds, D. P. Associates and personnel of the Rocky Mountain Arsenal Information Center (RIC).

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NORTH BOUNDARY CONTAINMENT/TREATMENT
SYSTEM OPERATIONAL ASSESSMENT
FY87 ACTIVITIES

PART I: INTRODUCTION

Background

1. The North Boundary Containment/Treatment System* Operational Assessment described herein is the third in a set of reports prepared to document and evaluate the geochemical and hydrologic parameters and treatment process performance related to the boundary system operations. This report covers the operating period of October 1986 through September 1987 (FY87).

2. The report incorporates by reference major system descriptions and previous operations described in the report entitled "North Boundary Containment/Treatment System Performance Report" (Thompson et al. 1985). A chronology of events leading up to the expanded system construction, descriptions of detailed construction features, and geologic and hydrologic system descriptions is also described by Thompson et al. (1985). The reader is directed to the basic report for detailed information concerning the history and physical description of the system. The report is cataloged under the document number 86078R01 at Rocky Mountain Arsenal Information Center (RIC).

Report Objectives

3. The objectives of this report are:

a. To assess the continuing effectiveness of the North Boundary System (NBS) in preventing the offpost migration of contaminated ground water along the system alignment during the four quarters covering FY87.

b. To document system operating parameters.

c. To identify and document system improvements, field studies, and facility alterations conducted during FY87.

d. To identify and document operational improvements that will enhance long-term system effectiveness.

* Hereinafter referred to as North Boundary System.

Approach

4. The Technical Operation Division (TOD) PMRMA established and provided the reporting framework and objectives, the data bases and general technical guidance. The Waterways Experiment Station, Vicksburg, Mississippi (WES) provided specialized Environmental Engineering and Geotechnical assessments.

5. The study was conducted in three phases. Originally, data were retrieved and organized by the TOD and Rocky Mountain Arsenal Information Center (RIC). Next, WES and RMA personnel reviewed the data bases for completeness and then developed geotechnical and water quality assessments along with various system performance evaluations. During the course of study, several in-progress reviews and coordination working sessions were held at RMA to facilitate exchange of information and to assure continuity and consistency in data interpretations and evaluations. Finally, the report was assembled from individual sections prepared by the various contributing authors.

Organization of Report

6. This report consists of one volume. The main text consists of six parts. Following this introductory part are five parts dealing with data collection, system operations including facility alterations and modifications, data evaluation for geologic, hydrologic and treatment systems, an assessment of effectiveness, and conclusions. There are four appendices. Appendix A contains the geologic and hydrologic plates that are referred to in the main text. The plant flow data are contained in Appendix B and the plant water quality data and dewatering data are in Appendix C and Appendix D respectively.

PART II: DATA COLLECTION

Ground-Water Monitoring

Background

7. The ground-water monitoring programs conducted at the North Boundary System during FY87 consisted of the collection of water quality and water level data. The FY87 monitoring program was conducted by the Program Manager for Rocky Mountain Arsenal (PMRMA) as part of remedial studies being conducted at RMA. The development of the monitoring task technical plans for Task 4, 6, 25, 36, 39, and 44, and the implementation of the monitoring programs was performed for the PMRMA under the direction of Environmental Sciences and Engineering (ESE), Inc., the task contractor.

FY87 Monitoring Program

8. The FY87 ground-water monitoring program was a continuation of the previous years boundary system monitoring program. Water levels were monitored and water quality samples were collected on a quarterly basis for FY87. New wells and borings were drilled to provide additional data. The Task 25 (ESE, 1987, RIC87014R24) and Task 36 technical plans (ESE, 1988, RIC88063R08) provide overviews of the environmental and geotechnical monitoring and investigation programs.

9. The RMA ground-water monitoring program utilized 163 well sites for quarterly water quality sampling during FY87. One hundred thirty (130) of the sites were alluvial wells and 33 sites monitored Denver Formation sand units. Quarterly water level measurements were collected from these sites, as well as an additional 70 alluvial and Denver sites in the study area. Ground-water sampling, decontamination, and chain-of-custody procedure were performed in accordance with, the technical guidelines outlined in the technical plan for Task 4. A summary of the sampling procedures is presented in the Task 25 technical plan (ESE 1987).

10. The field program of water sample collection and water level data collection was performed by ESE, Inc. of Englewood, Colorado. Analysis of water quality samples were conducted jointly by ESE laboratories in Gainesville, Florida and Englewood, Colorado. Due to the modification of the analytical methods the detection levels were changed during the 4th quarter FY87. The analytical methods are presented in Task 25 and 36 technical plans and are

catalogued under RIC document numbers 87014R24 and 88063R08, respectively. Table 1 is the list of chemical analysis performed for the four quarters of FY87.

11. Additional water quality and water level data were collected under Task 39, "RMA Offpost Remedial Investigation/Feasibility Study," and Task 44 "RMA Onpost/Offpost Ground/Surface Water Monitoring Programs." The monitoring networks from Tasks 39 and 44 included wells that were within the study area and this information was included in the Task 25 evaluation (ESE 1988).

12. The basic ground water monitoring program for the PMRMA is the regional program, that consists of the RMA Water Quantity/Quality Survey and the Off-post Contamination Assessment. These programs were initiated at the beginning of FY86 and consisted of monitoring the water quality at 363 alluvial and Denver Formation sites. An additional 17 alluvial aquifer wells were installed in the vicinity of NBS and 24 new Denver Formation Wells. This increased the number of wells to 85 sites, consisting of 50 alluvial and 35 Denver wells that were monitored for water quality in the NBS study area.

13. Data Management. The sample analysis and water level data for the NBS are maintained on the PMRMA computer system and the RIC computer. Laboratory and field data were entered into the data base by the RIC or the task contractors, subjected to the data check routine, validated and placed into the PMRMA data base. Data sets were prepared and then used to construct data tables, maps, graphs, etc. Appendix A contains the geologic and hydrologic plates, Appendix B the flow data, Appendix C the plant water quality data, and Appendix D contains the dewatering well data.

Plant Operations Monitoring

14. The treatment plant monitoring program included collection of data on flow rates through the system and on the quality of the water entering and leaving the plant. The flow quantities were obtained from individual totalizing flow meters located upstream of each adsorber and on the combined effluent

Table (Concluded)

Analysis/Analytes	Maximum Hold Time	Level of Certification	Reference Methods	Method
<u>DCPD/MIBK</u>		Quantitative	EPA 608	CAP-GC/FID
Dicyclopentadiene/ Methylisobutylketone	Extract as quickly as possible. (No more than 7 days). Analyze extract within 40 days of extraction.			
<u>DIMP/DMMP</u>		Qualitative	EPA 622	PACK-GC/FPD-I
Diisopropylmethylphosphonate/ Dimethylmethylphosphonate	Analyze within 47 days of sampling.			
<u>DBCP</u>		Quantitative		CAP-GC/ECD
Dibromochloropropane	14 days			
<u>Inorganics</u>		Quantitative		
Arsenic	6 months		EPA 205	AA-Hydride
Chloride	28 days		EPA 300	Furnace Ion Chromatograph
Fluoride	28 days			
Sulfate	28 days			
<u>Volatile Aromatics</u>		Quantitative	EPA 602	PACK-GC/PID
Toluene	14 days			
Benzene	14 days			
Xylene (o-, m-, p-)	14 days			
Ethylbenzene	14 days			

Source: ESE, 1985.

stream. The meters were read and the values recorded on a daily basis. Weekly flow quantities were calculated from the daily reports. Weekly flow rates were calculated by dividing the total flow for the week by 10,080 minutes per week. Flow rates for the dewatering and recharge wells were obtained from individual flow meters located in Building 808 (the treatment plant building).

15. Samples are taken weekly from the interior of the adsorbers for process control. These data are used in determining when to change carbon within the adsorber. Carbon changeout is done on a batch basis. The chemical quality of the plant's influent and effluent water was monitored by taking water samples on a weekly basis and analyzing them. Influent samples were collected from each of the three individual carbon adsorber influent lines from sampling ports located between the pre-filters and the adsorbers. A composite effluent sample was collected from a sampling port upstream of the post-filters. Influent and effluent samples were collected on weekly basis. Samples were collected also from the dewatering wells on a quarterly basis. These samples were collected from ports located in the well pits.

16. All water samples were collected in previously cleaned, glass containers, sealed, and transported to the appropriate analytical laboratory at RMA or ESE for analysis. The analytes for which the plant water samples were analyzed for during FY87 are presented in Table 2. All analyses were performed using standard methods. The sample analysis and flow data were entered into the analytical data base by laboratory personnel, subjected to a quality control routine, validated, and placed into the PMRMA data base by the RIC. Data sets were prepared for use in developing the tables and figures used in this report. Copies of the plant flow and analytical data for FY87 are contained in Appendices B and C, respectively of this report.

Table 2
Chemical Analysis of Treatment Plant Samples

Analyte	FY 87 Quarters			
	1st	2nd	3rd	4th
<u>Organochlorine Pesticides</u>				
Aldrin	x	x	x	x
Endrin	x	x	x	x
Dieldrin	x	x	x	x
Isodrin	x	x	x	x
Hexachlorocyclopentadiene				x
p,p'-DDE				x
p,p'-DDT				x
Chlordane				x
<u>Volatile Organohalogenes</u>				
Chlorobenzene				x
Chloroform	x	x	x	x
Tetrachloride	x	x	x	x
trans-1,2-Dichloroethylene				x
Trichloroethylene (TCE)	x	x	x	x
Tetrachloroethylene		x	x	x
1,1 Dichloroethylene				x
1,1 Dichloroethane				x
1,2 Dichloroethane		x	x	x
1,1,1 Trichloroethane				x
1,1,2 Trichloroethane				x
Methylene Chloride				x
1,2 Dichloroethylene	x	x	x	x
<u>Organosulfur Compounds</u>				
P-Chlorophenylmethylsulfone (PCPMSO ₂)	x	x	x	x
P-Chlorophenylmethanysulfoxide (PCPMSO)	x	x	x	x
P-Chlorophenylmethylsulfide (PCPMS)	x	x	x	x
1,4-Dithiane	x	x	x	x
1,4-Oxathiane	x	x	x	x
Dimethyldisulfide (DMDS)				x
Benzothiazole				x
<u>DCPD/MIBK</u>				
Dicyclopentadiene/ Methylisobutylketone	x	x	x	x

(Continued)

Table 2 (Concluded)

Analyte	FY 87 Quarters			
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
<u>DIMP/DMMP</u>				
Diisopropylmethylphosphonate/ Dimethylmethylphosphonate	x	x	x	x x
<u>DBCP</u>				
Dibromochloropropane	x	::	x	x
<u>Inorganics</u>				
Arsenic				x
Chloride	x	x	x	x
Fluoride	x	x	x	x
Sulfate				x
<u>Volatile Aromatics</u>				
Toluene		x	x	x
Benzene				x
Xylene (o-, m-, p-)				x
Ethylbenzene				x

PART III: SYSTEM OPERATIONS AND FACILITY ALTERATIONS

Operational Summary

17. A record of plant operations for the North Boundary system is maintained by RMA plant operations personnel with major events documented on a daily basis. This daily record contains information on the operation, maintenance activities, and repairs of the treatment plant equipment and dewatering and recharge wells. It also details other events such as plant downtime, equipment failure, and filter and carbon removal and replacement.

18. The operational performance of the treatment plant has improved greatly over the past two years. Downtime for repairs has been significantly reduced. Other than for carbon loading or transferring, only adsorber C was out of operation due to mechanical failure during the first quarter of FY87. That incident involved the repair of a broken meter which required approximately one hour of downtime. During the second quarter of FY87, adsorber B was out of operation for a couple of hours to repair a broken gauge. During the third quarter of FY87, the plant was shut down a total of approximately 50 hours to repair sump pumps. Also during this time, the plant was shut down for one day to install a new filter system. During the fourth quarter of FY87, adsorber B was down for approximately 5 days to allow for replacement of the inlet screens. The whole plant was down for several days during replacement and realignment of a broken recharge line. The recharge wells were cleaned during the first quarter of FY87 to improve the systems ability to reinject treated water north of the containment barrier.

Alterations

19. The major alteration to the North Boundary system during FY87 involved the installation of bag-type effluent filters to the treatment plant. The filters were installed in May 1987 to improve filtering efficiency by improving the removal of carbon fines from the plant effluent.

System Flow Quantities

20. The quantity of water passed through the treatment system is recorded on a daily basis. The flow quantities recorded for FY87 are presented in tabular form in Appendix B of this report. Graphs of weekly flow rates for each adsorber and the effluent stream have been prepared and are presented in Figures 1 through 4. The treatment plant flow data were gathered on a weekly (7 day) basis beginning with the first day of the FY through the end of the FY.

21. During FY87, total flow (effluent) rates ranged from a low of 150 gpm to a high of approximately 325 gpm. Average flow rates and total gallons of water treated during FY87 are presented in Table 3. The total volume treated in FY87 was approximately 4.8 million gallons higher than that treated in FY86. The average flow rate in FY87 was approximately 9.2 gpm higher than that for FY86.

Table 3
FY 87 System Flow Quantities

Adsorber	Average Flow Rate (gpm)	Total Volume Treated (gal)
A	48.37	25,470,700
B	85.65	45,025,700
C	115.29	60,577,300
Total Effluent	249.31	131,073,700

System Influent and Effluent Water Quality

22. The quality of the influent water and effluent water from the treatment system is monitored periodically by taking grab samples and analyzing them. Influent water samples are collected from each of the three individual adsorber treatment units in order to determine the quality of water flowing to each adsorber. A combined effluent sample is collected to determine overall effluent quality.

AVERAGE GALLONS PER MINUTE

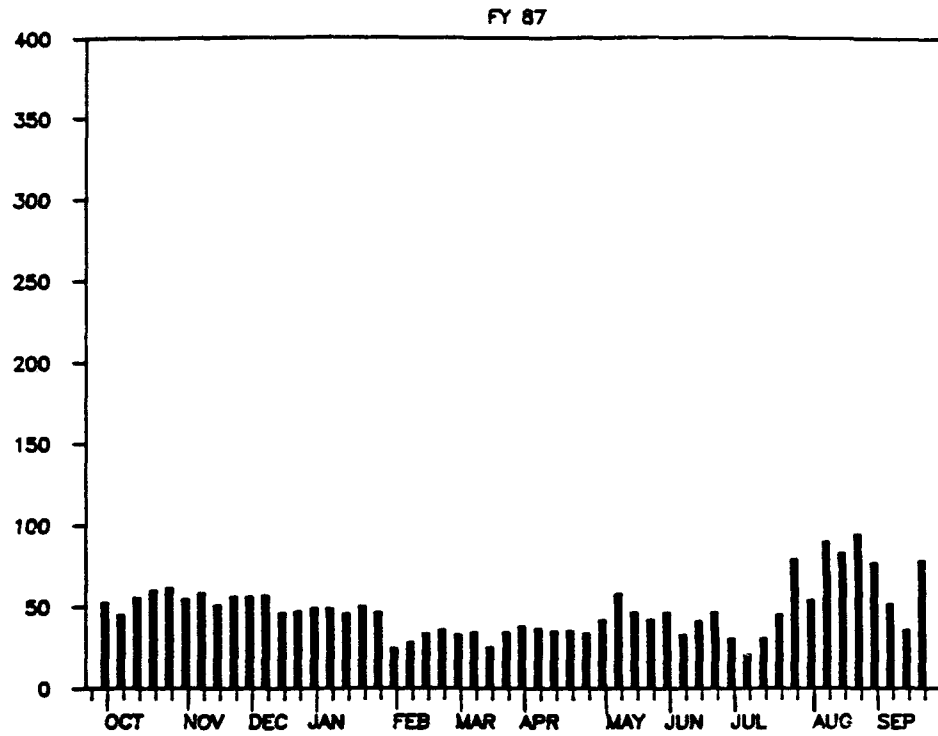


Figure 1. Adsorber A flow rate during FY87

AVERAGE GALLONS PER MINUTE

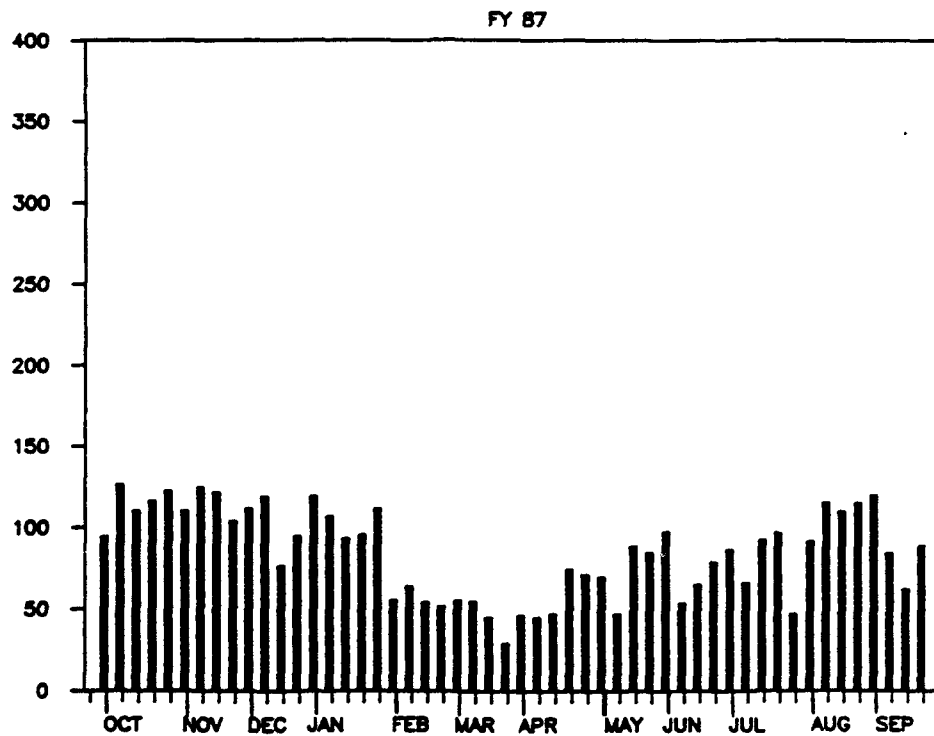


Figure 2. Adsorber B flow rate during FY87

AVERAGE GALLONS PER MINUTE

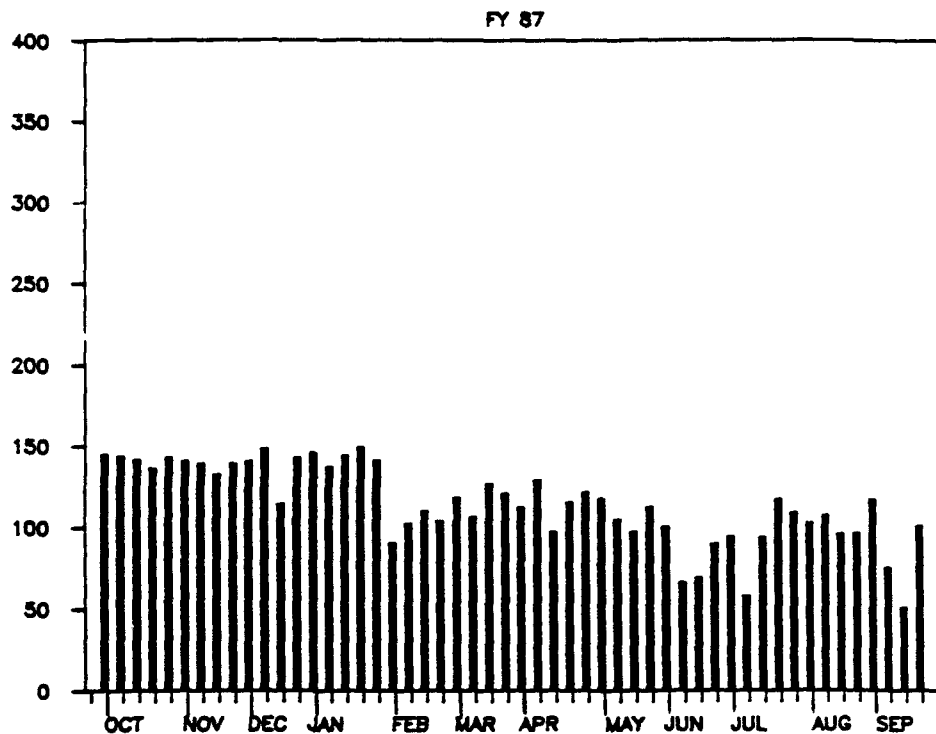


Figure 3. Adsorber C flow rate during FY87

AVERAGE GALLONS PER MINUTE

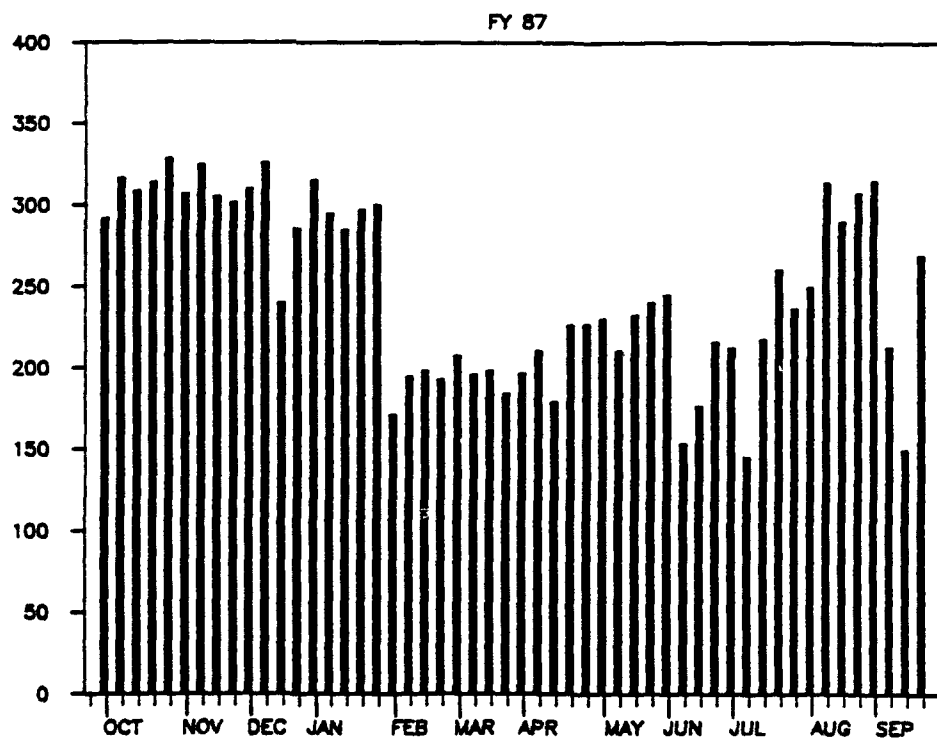


Figure 4. Effluent flow rate during FY87

23. The influent and effluent water samples were analyzed for the analytes listed in Table 2 of this report. Some of the analyses for certain contaminants were initiated late in FY87. The results of the chemical analyses for the period October 1986 through September 1987 are presented in tabular form in Appendix C of this report. Graphs of the concentrations found for endrin, dieldrin, isodrin, hexachlorocyclopentadiene, p,p'-DDT, chloroform, carbon tetrachloride, trichloroethylene, tetrachloroethylene, 1,2 dichloroethane, 1, 2 dichloroethylene, combined organo-sulfurs, dithiane, benzothiazole, DCPD, DIMP, DBCP, arsenic, chloride, fluoride, sulfate, toluene, and ethylbenzene over this period have been prepared and are presented in Figures 5 through 27. No concentrations of the other contaminants listed in Table 2 in excess of their respective detectable limits were found in the samples collected during FY87. Therefore, no graphs were prepared for these nondetectable contaminants.

24. A separate graph has been prepared for each contaminant for each adsorber influent and plant effluent for FY87. Each graph (except where noted) presents a plot of the contaminant concentrations found and three lines indicating the detectable limit, the maximum operating limit (MOL) permitted, and the average concentration over the FY where sufficient data were available to calculate an average. The MOL used in this report is defined as the water quality criterion against which the operating performance of the treatment plant is compared in order to assess treatment effectiveness for the various contaminants of concern. A list of the MOL's used during the FY87 operational assessment is presented in Table 4.

25. As discussed by Thompson et al. (1985), each of the three sumps (wetwells) at the treatment plant (one for each manifold) were to feed an individual adsorber under the original operating scenario. Under this mode of operation, the influent to a particular adsorber would generally contain a higher concentration of a particular contaminant than would the others, since the contaminants are not evenly distributed along the length of the barrier. Operational changes and occasional mechanical problems have resulted in a requirement to periodically distribute water from individual sumps to more than one adsorber. This action has resulted in fluctuations in the concentrations of the various contaminants in the influent to each adsorber. Thus, conclusions concerning the increase or decrease in concentrations of

Table 4
Maximum Operating Limits for North Boundary System

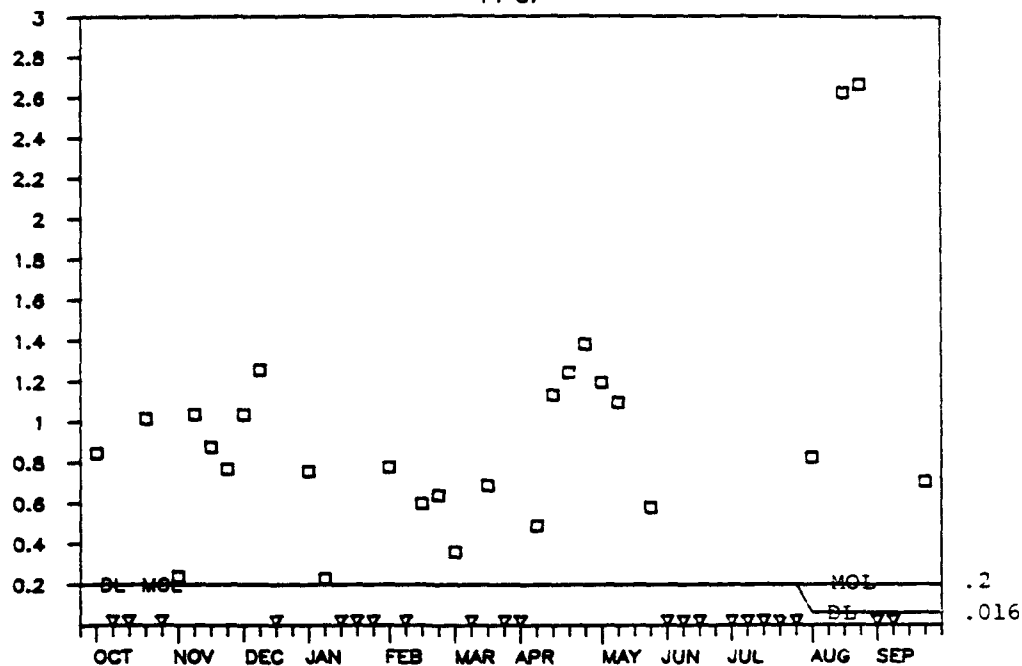
Parameter	Maximum Operating Limit (MOL)	Source*
Aldrin	0.2 µg/l	Guidance from OTSG (Army) until standards are developed
Chloride	N.A.	EPA Secondary Drinking Water Regulation standard is 250mg/l
Dibromochloropropane (DBCP)	0.2 µg/l	State of Colorado Department of Health limit per letter to Commander, RMA, 26 June 79.
Dicyclopentadiene (DCPD)	24.0 µg/l	The State of Colorado has requested the Army to meet a limit of 24 µg/l for DCPD based on an odor threshold value.
Diisopropylmethylphosphonate (DIMP)	500 µg/l	These criteria are recommended by the US Medical Bioengineering Research and Development Lab (26 Aug 76 and are based on toxicology studies (26 Aug 76) conducted by the Army. The National Academy of Sciences Committee on Military Environmental Research has reviewed the procedures and results of toxicology studies and concurred in the drinking water levels (1 Feb 77).
Dieldrin	0.2 µg/l	Guidance from OTSG (Army) until standards are developed
Endrin	0.2 µg/l	EPA National Primary Drinking Water Regulation
Fluoride	N.A.	EPA Final Rule on Fluoride, National Primary and Secondary Drinking Water Standards, 40 CFR Parts 141, 142 and 143, maximum concentration limit is 4.0 mg/l
Combined Organo-Sulfurs	100 µg/l	Guidance from OTSG (Army) until standards are developed

N.A. = Not Applicable

* Source: After Rocky Mountain Arsenal Contamination Control Program Management Team (1983)

ADSORBER A INFLUENT -- ENDRN

CONCENTRATION (UGL)



ADSORBER B INFLUENT -- ENDRN

CONCENTRATION (UGL)

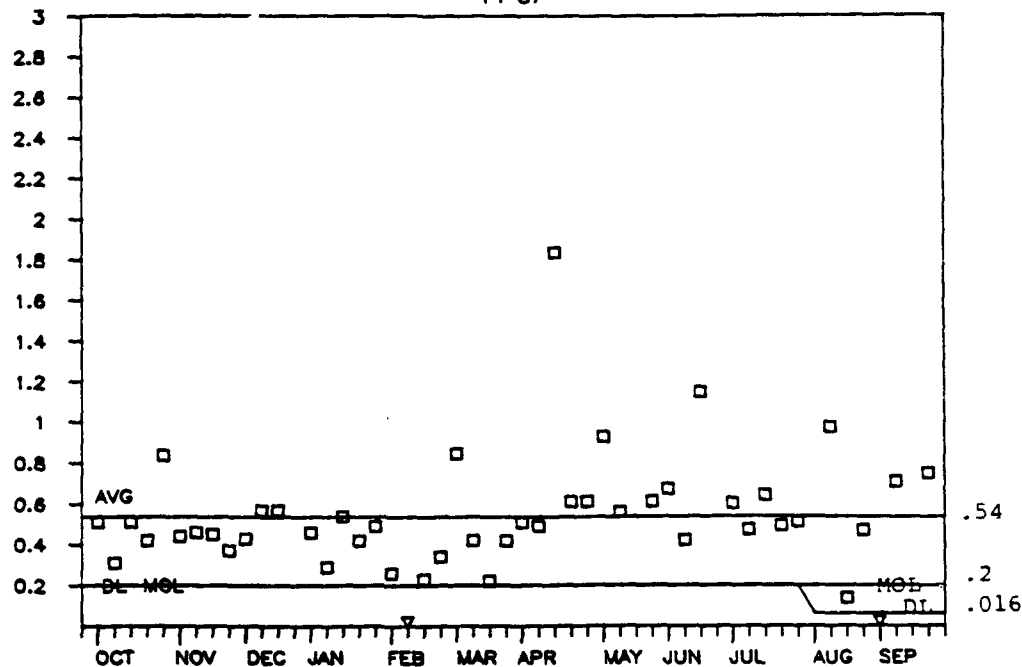


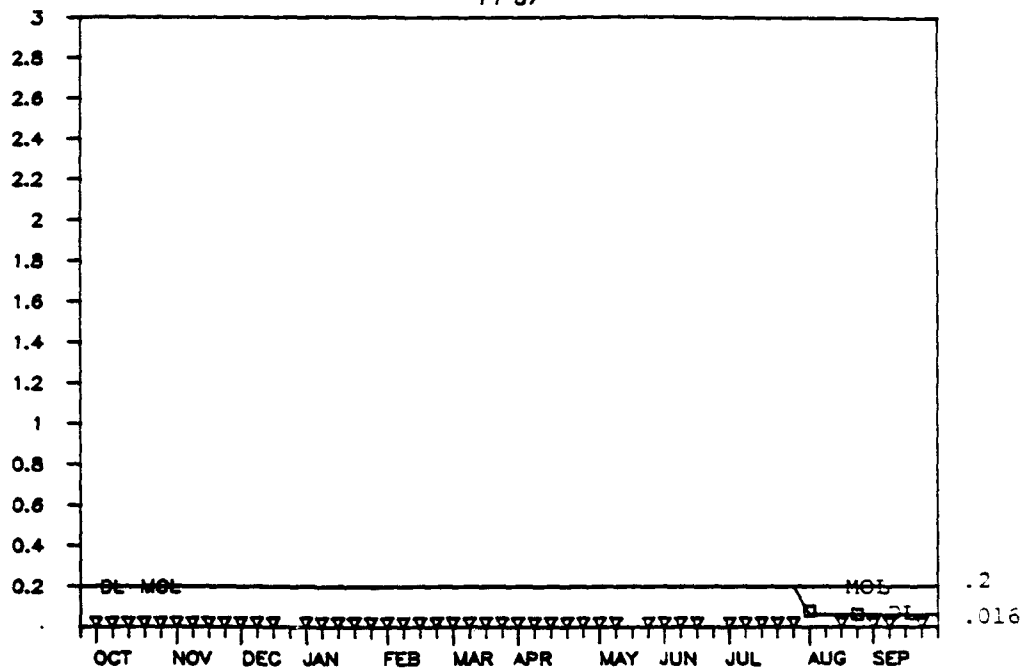
Figure 5. FY87 Endrin (continued)

CONCENTRATION (UGL)

R.I.C.

ADSORBER C INFLUENT -- ENDRN

FY 87



CONCENTRATION (UGL)

R.I.C.

PLANT EFFLUENT -- ENDRN

FY 87

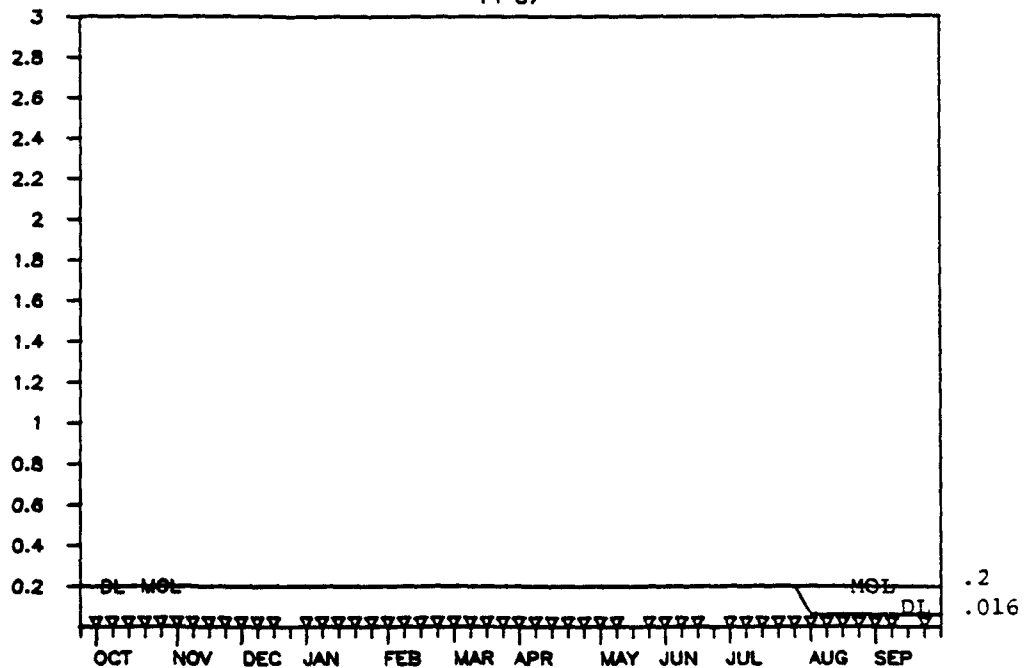


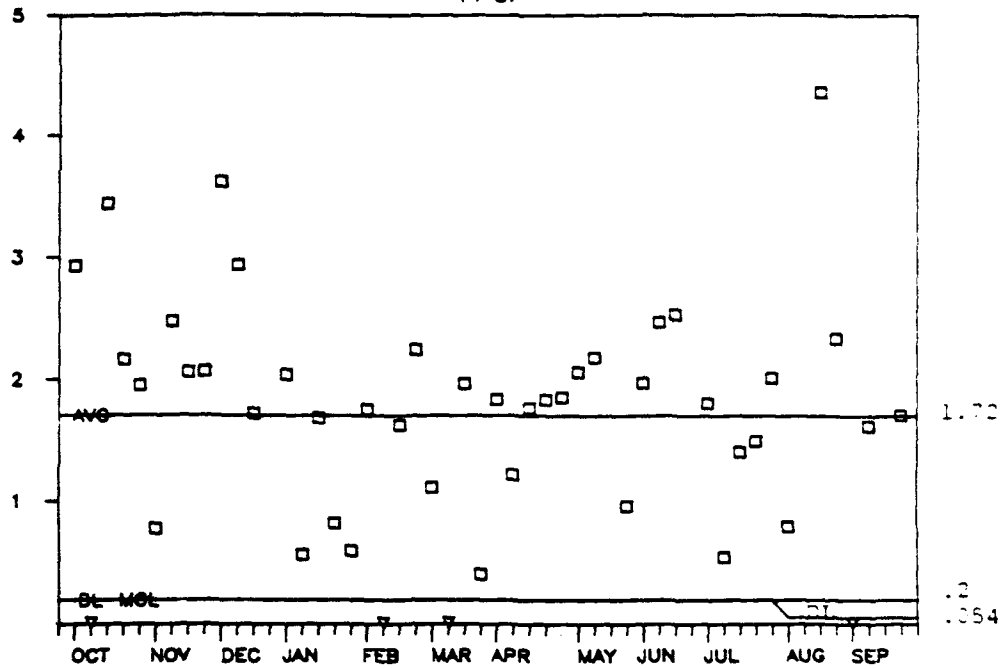
Figure 5. (concluded)

R.I.C.

ADSORBER A INFLUENT -- DLDRN

FY 87

CONCENTRATION (UGL)



R.I.C.

ADSORBER B INFLUENT -- DLDRN

FY 87

CONCENTRATION (UGL)

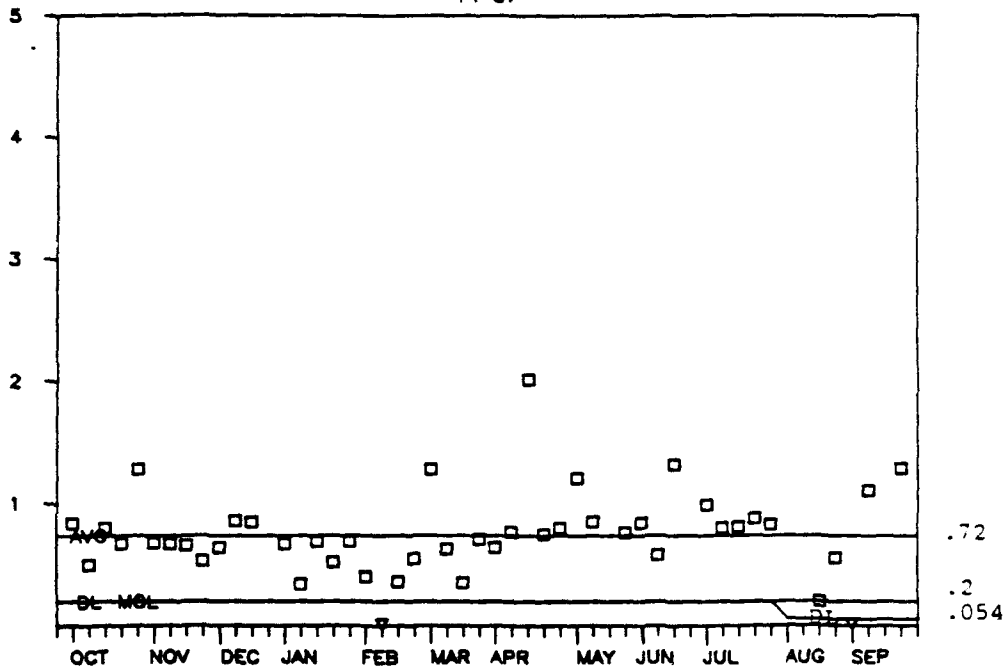


Figure 6. FY87 Dieldrin (continued)

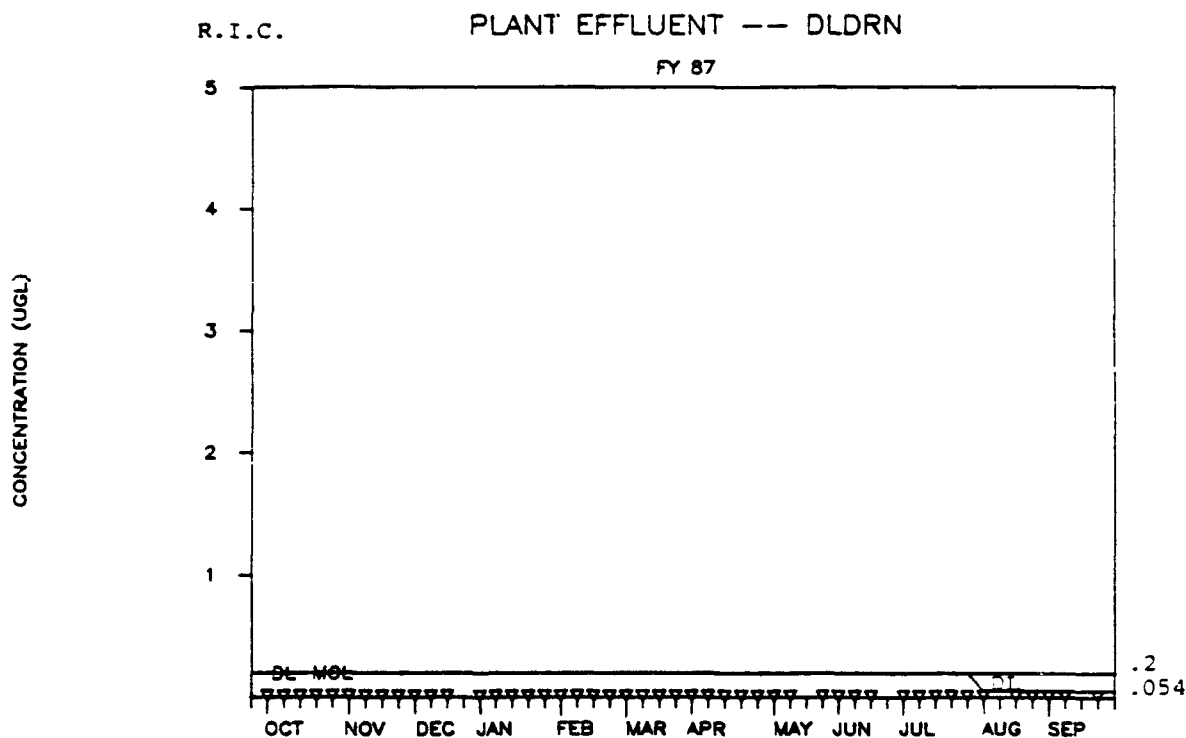
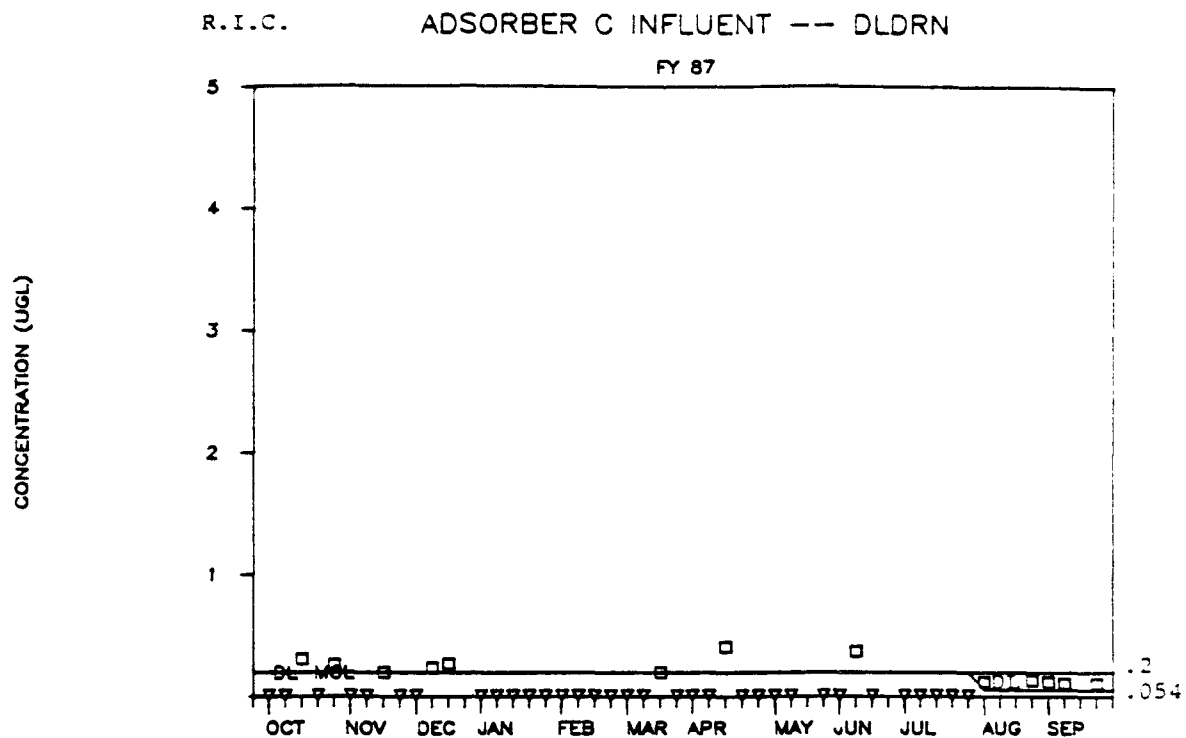


Figure 6. (concluded)

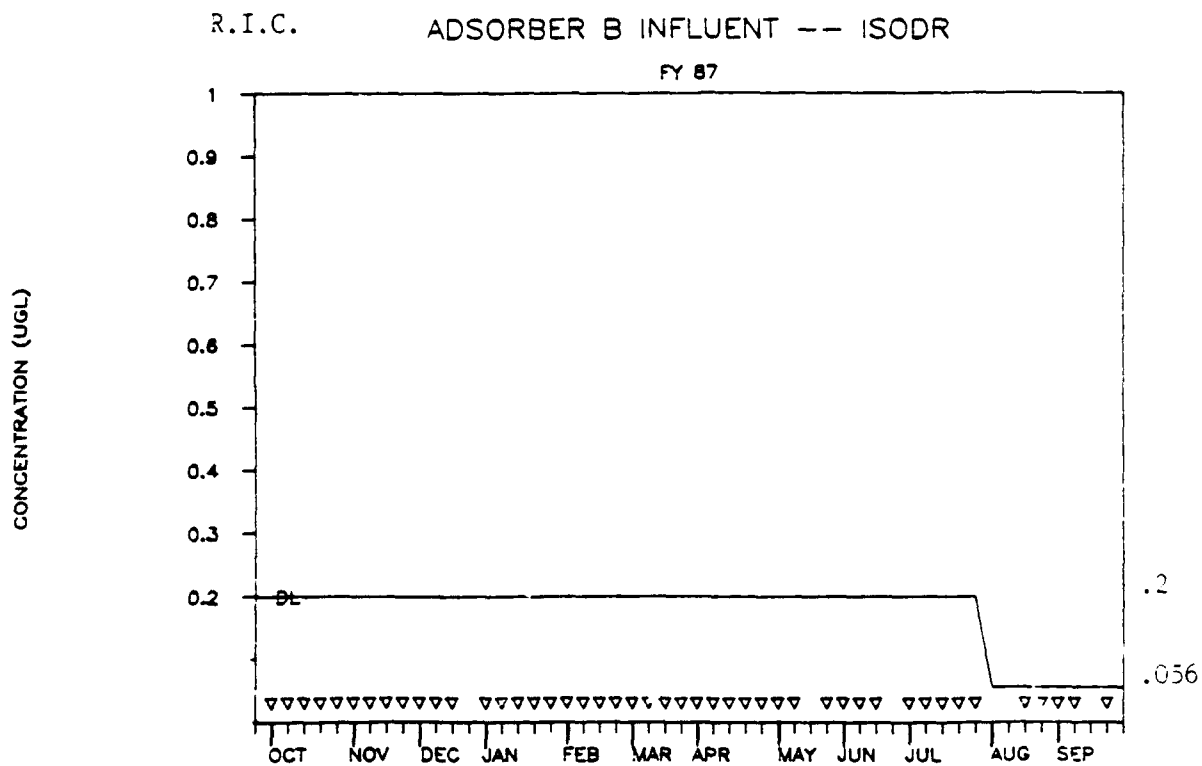
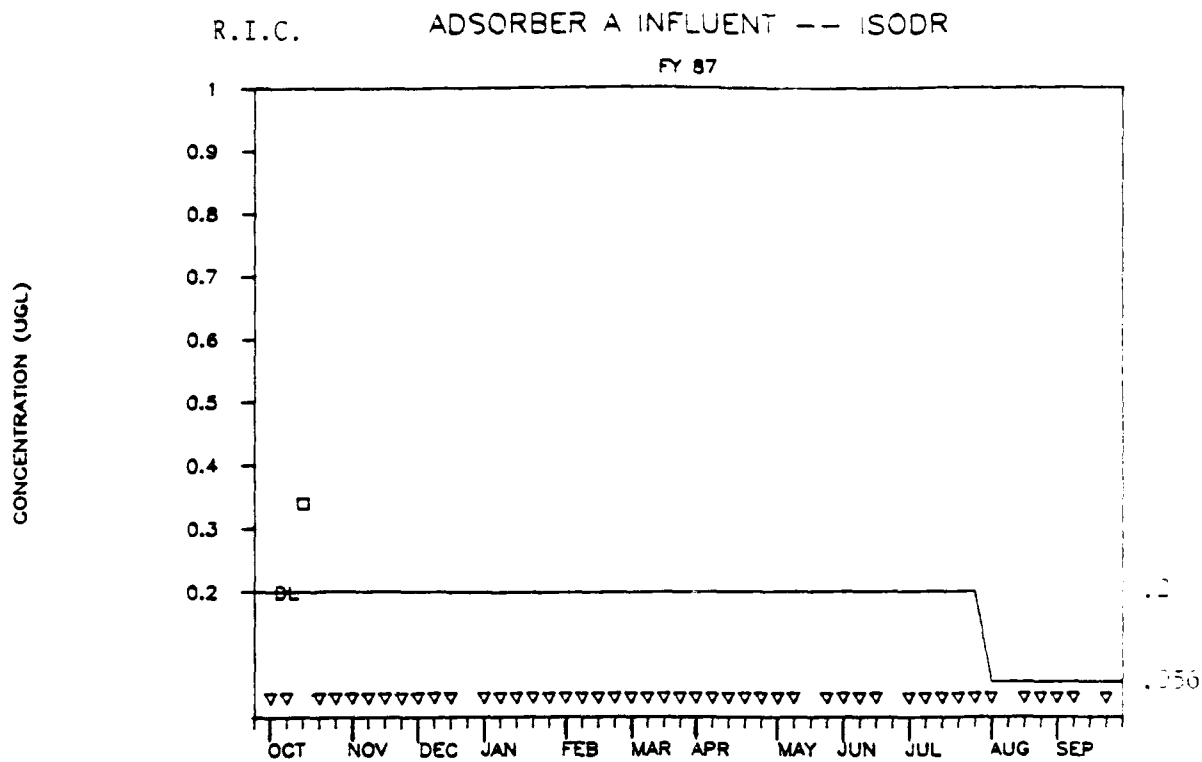


Figure 7. FY87 Isodrin (continued)

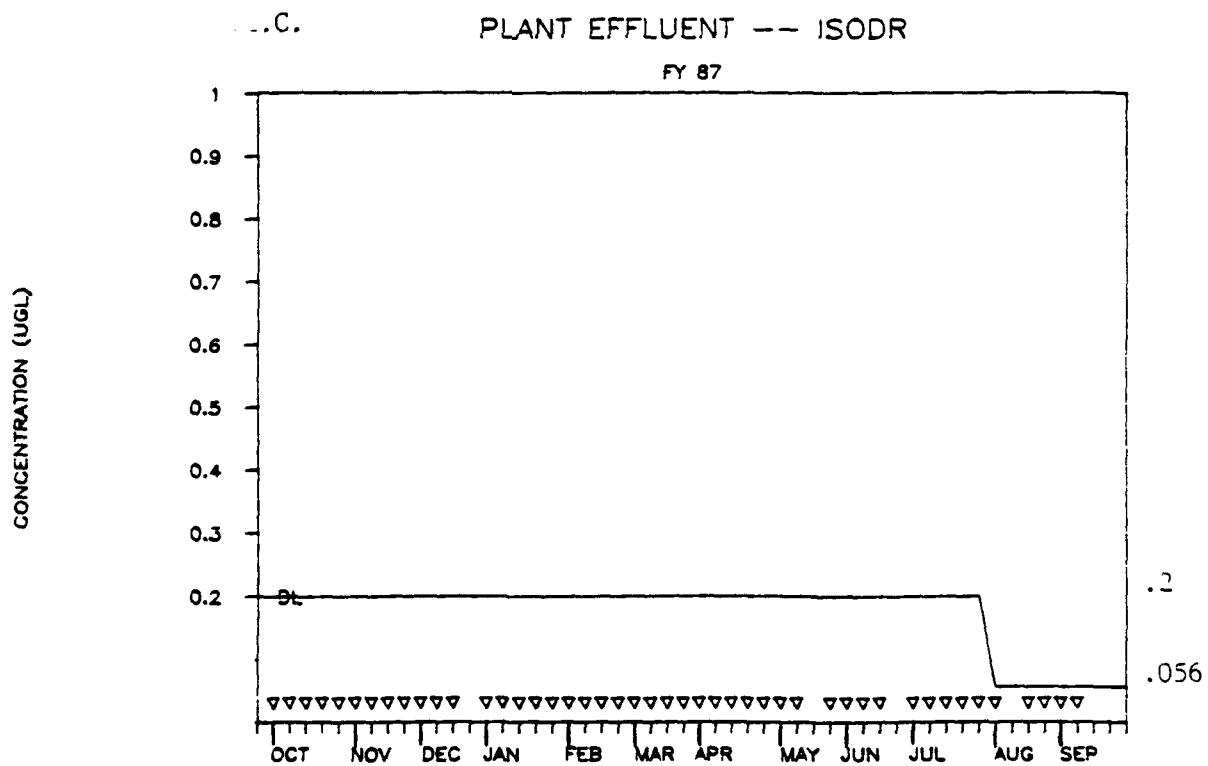
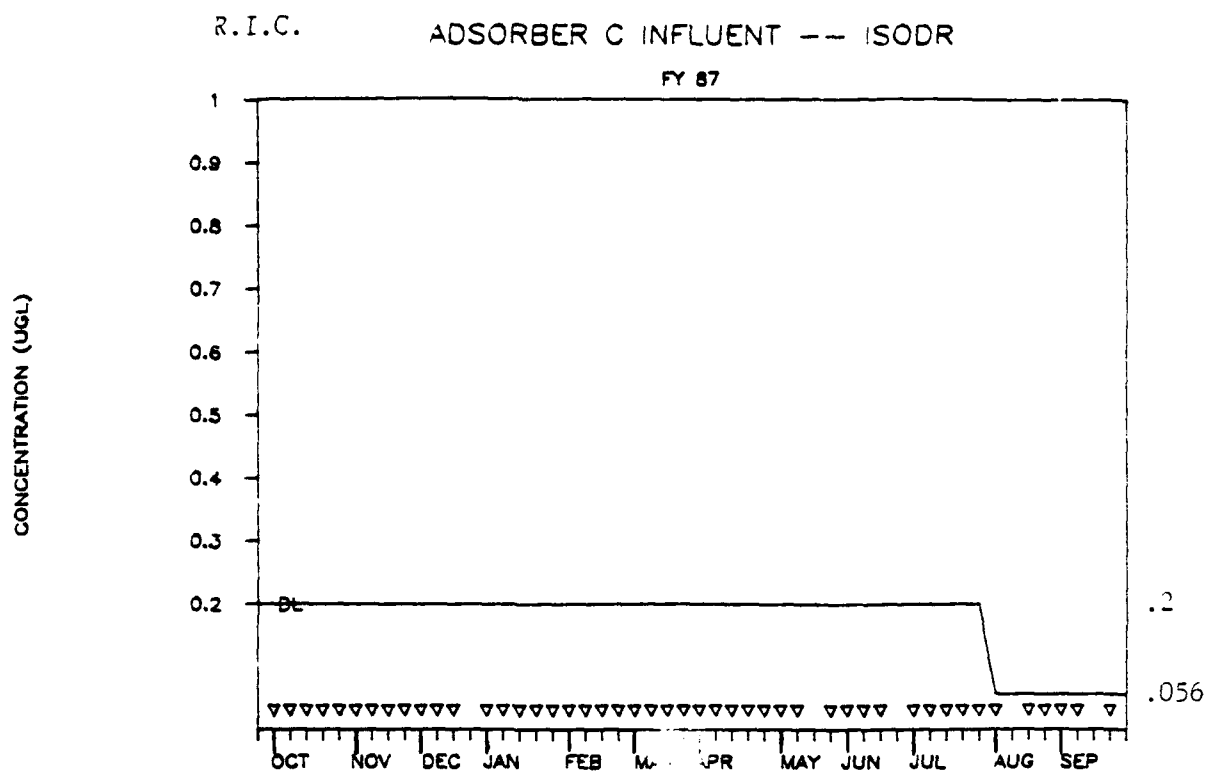


Figure 7. (concluded)

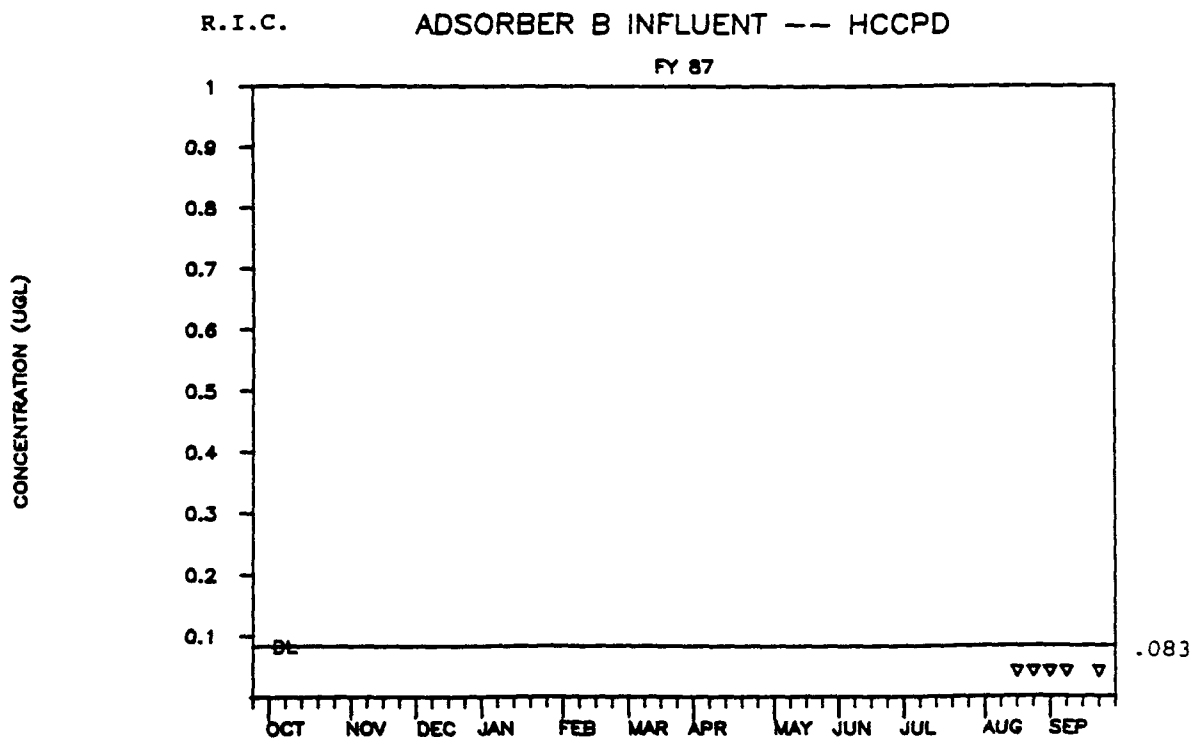
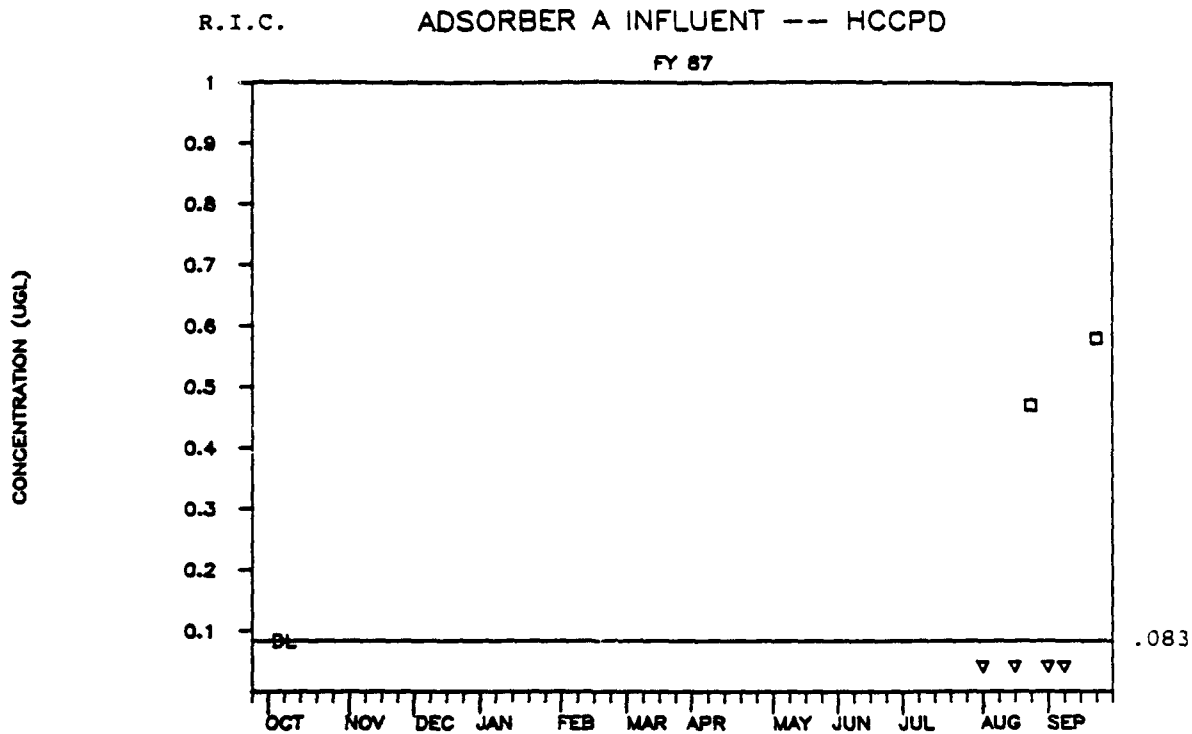


Figure 8. FY87 Hexachlorocyclopentadiene (continued)

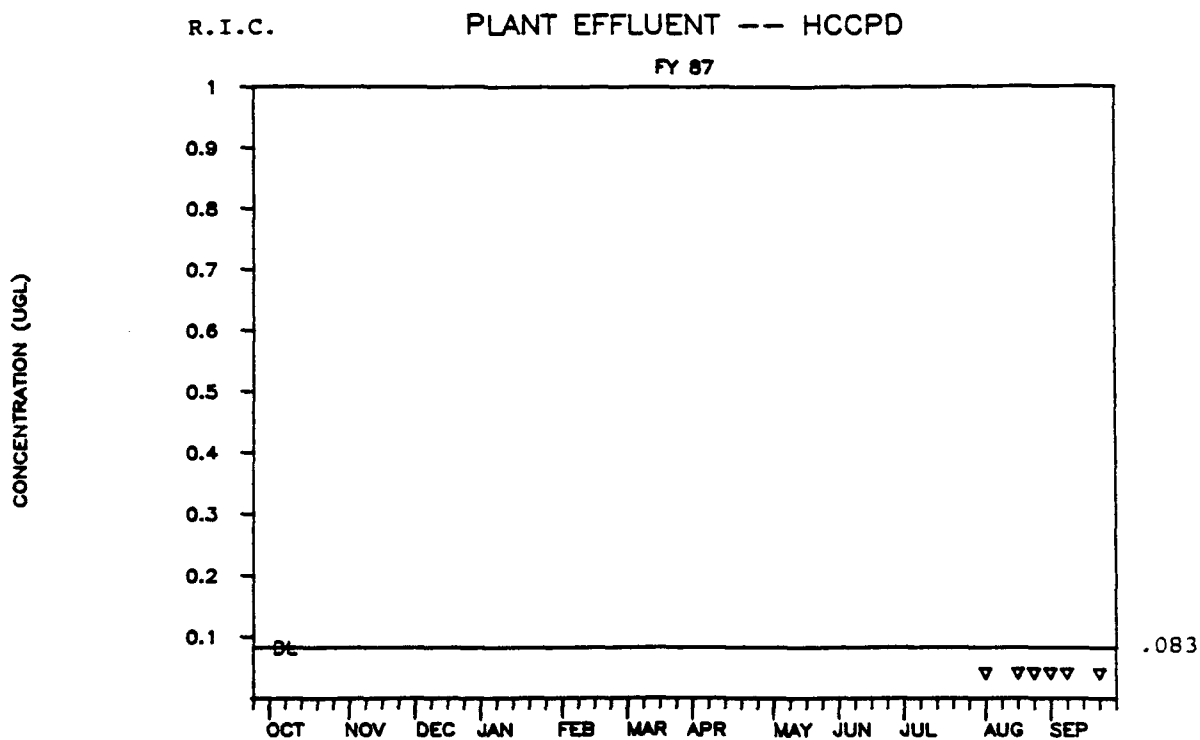
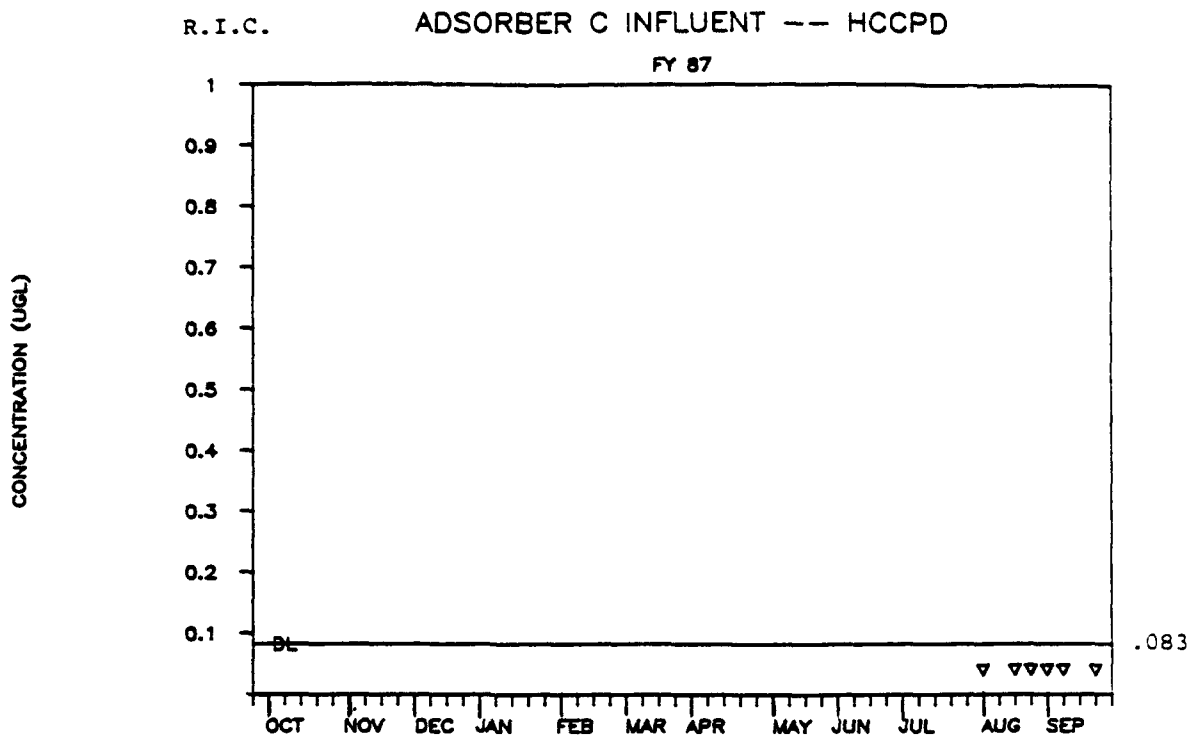


Figure 8. (concluded)

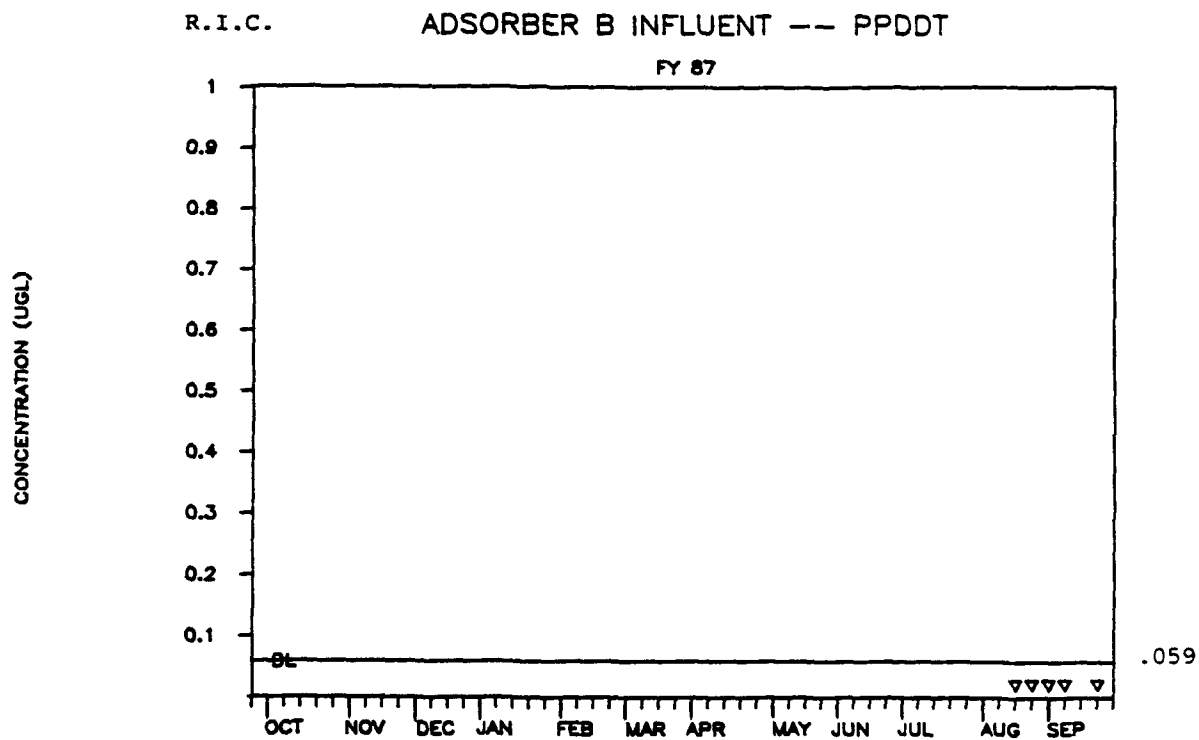
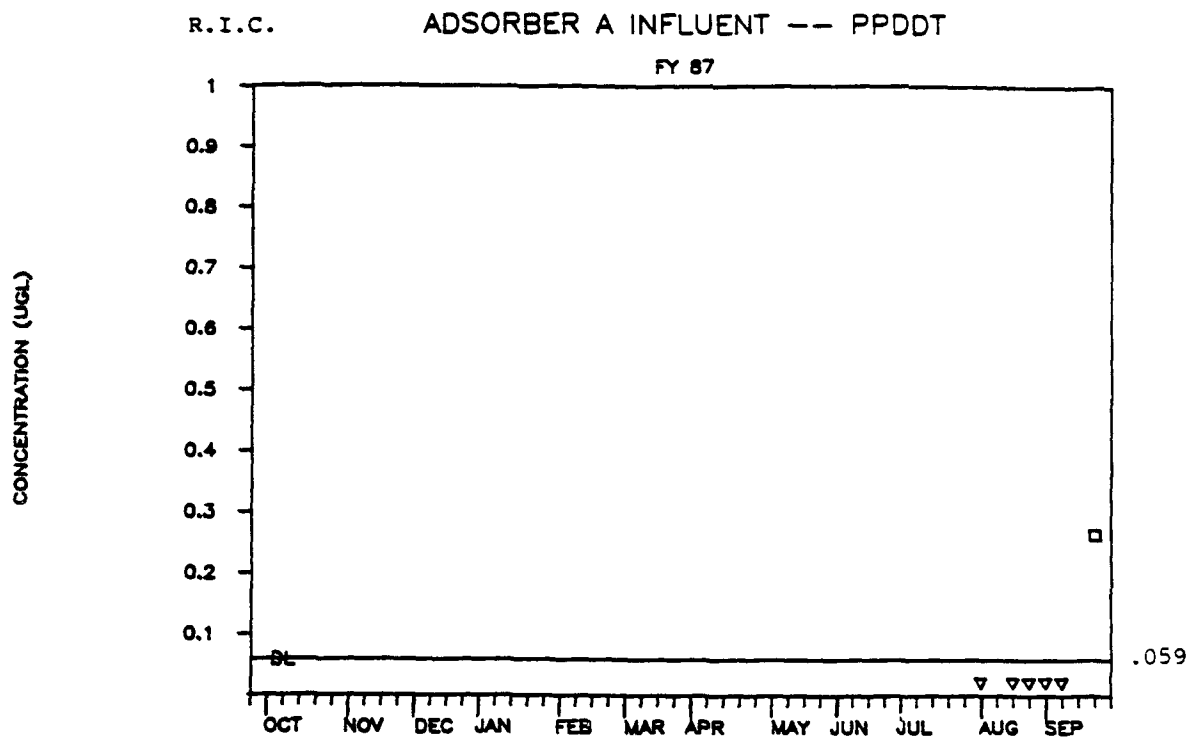


Figure 9. FY87 p,p'-DDT (continued)

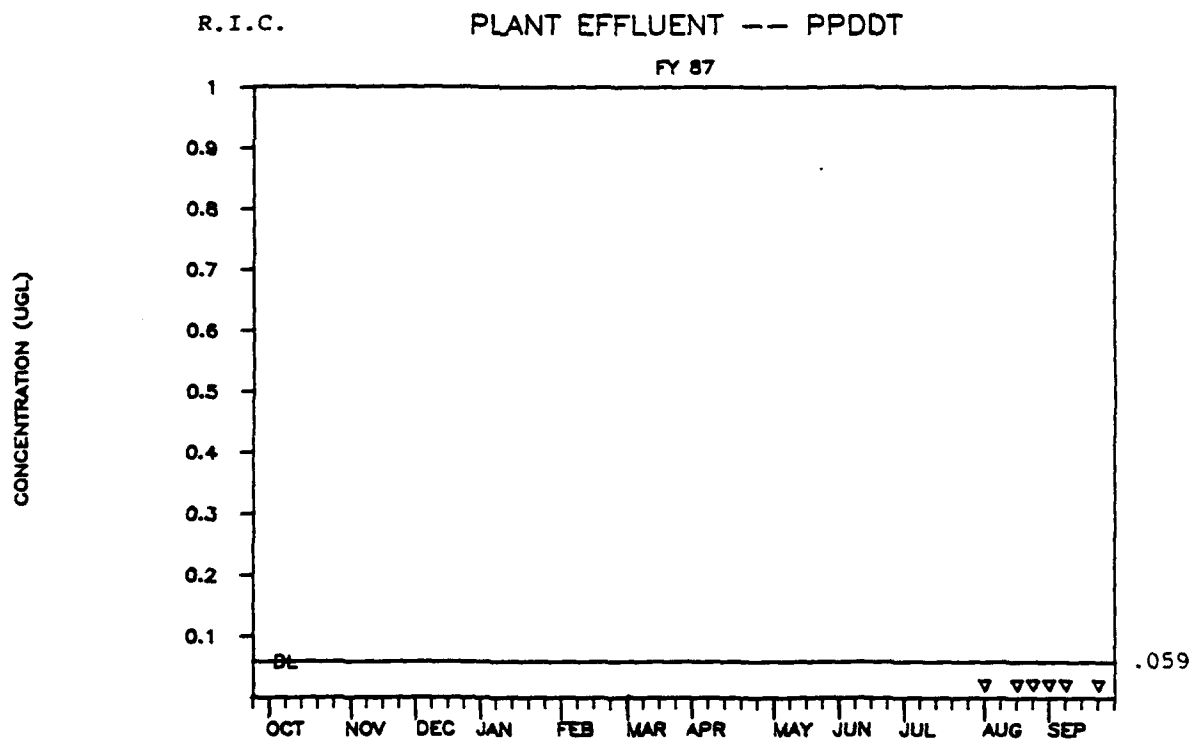
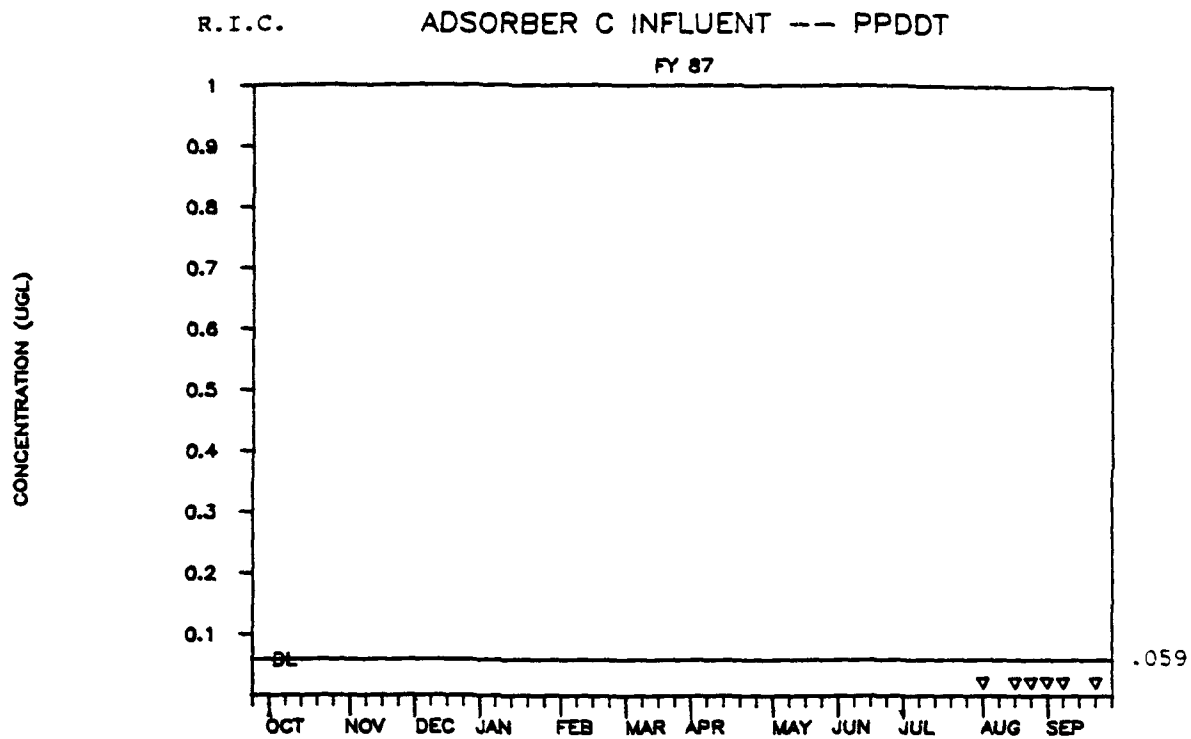
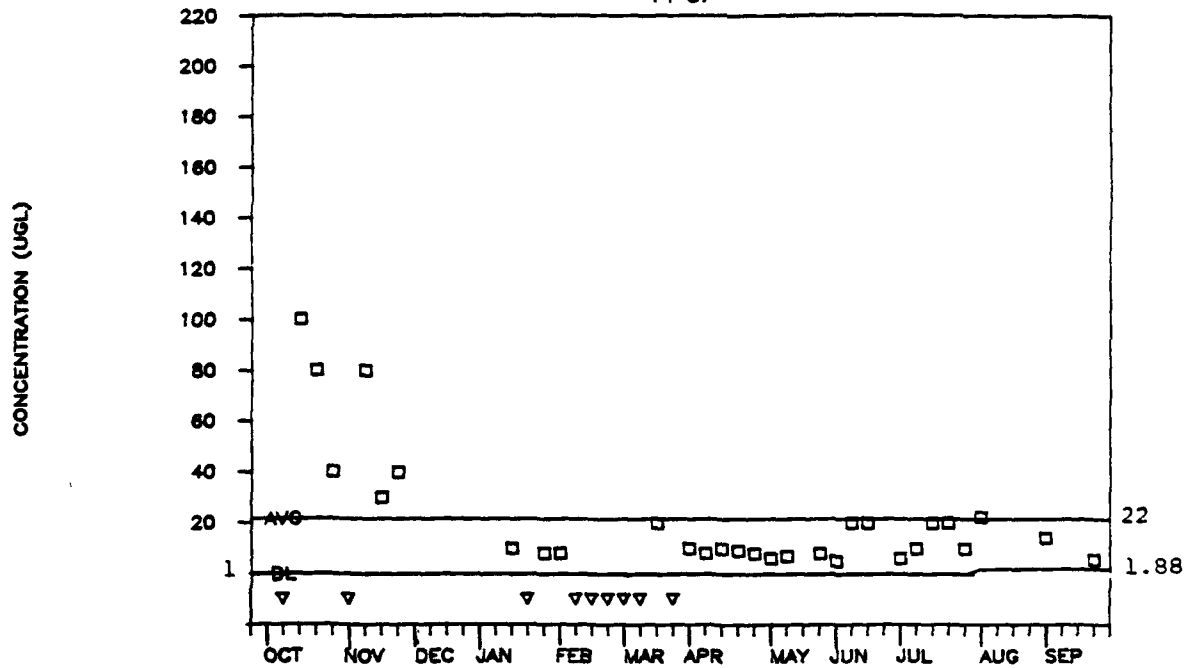


Figure 9. (concluded)

ADSORBER A INFLUENT -- CHCL3

FY 87



R.I.C.

ADSORBER B INFLUENT -- CHCL3

FY 87

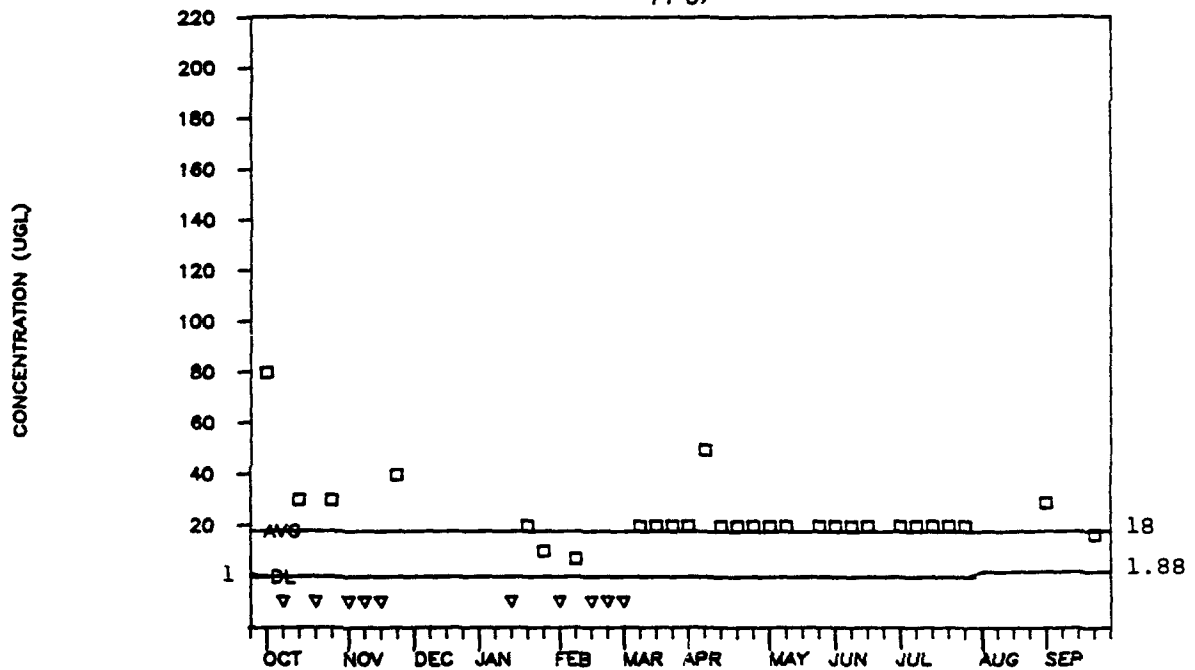


Figure 10. FY87 Chloroform (continued)

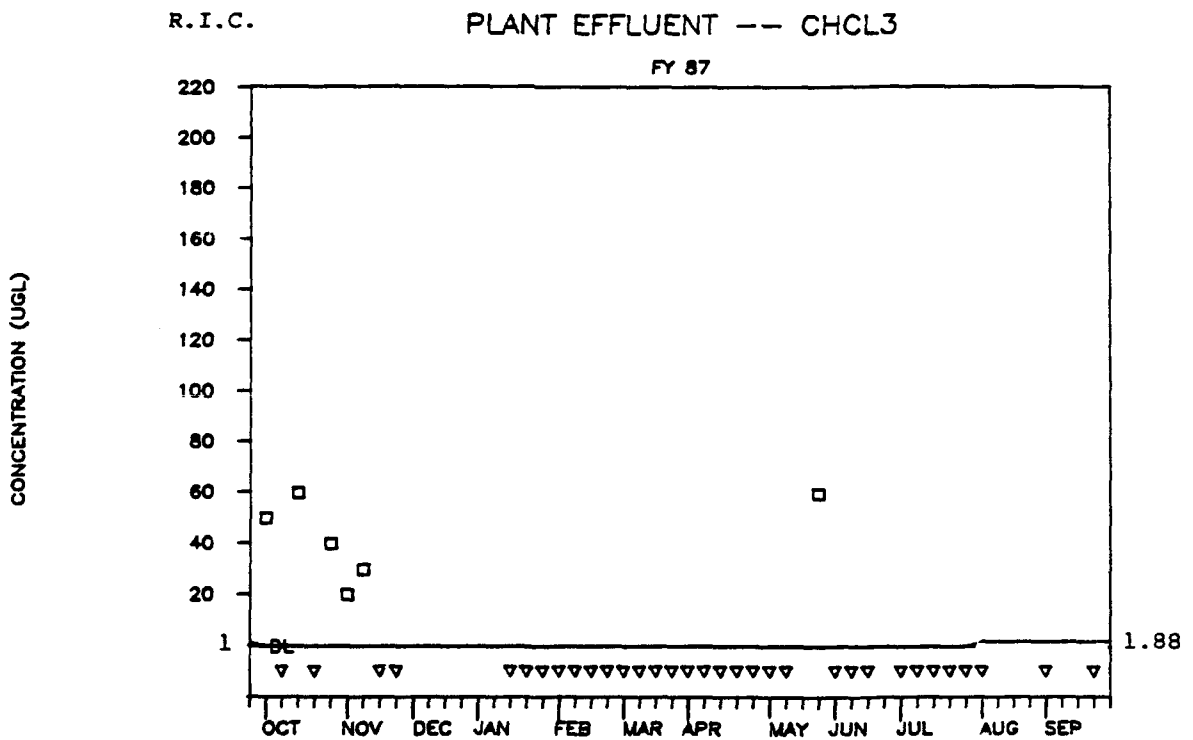
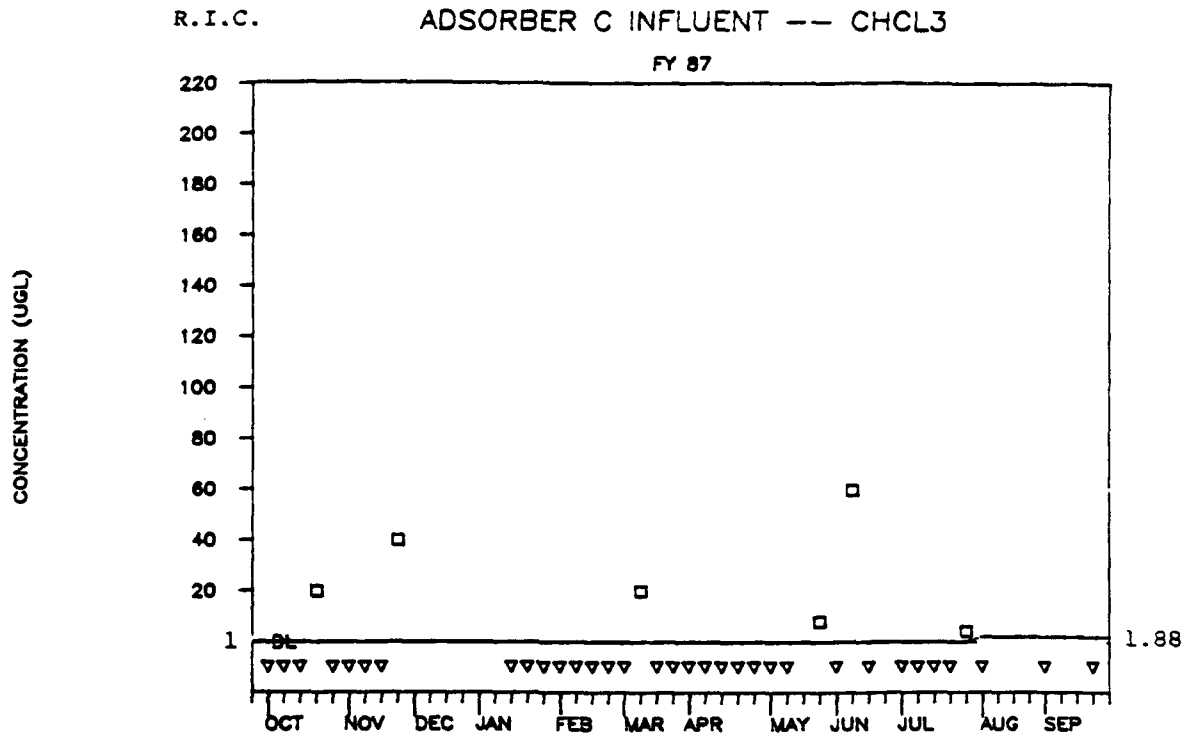
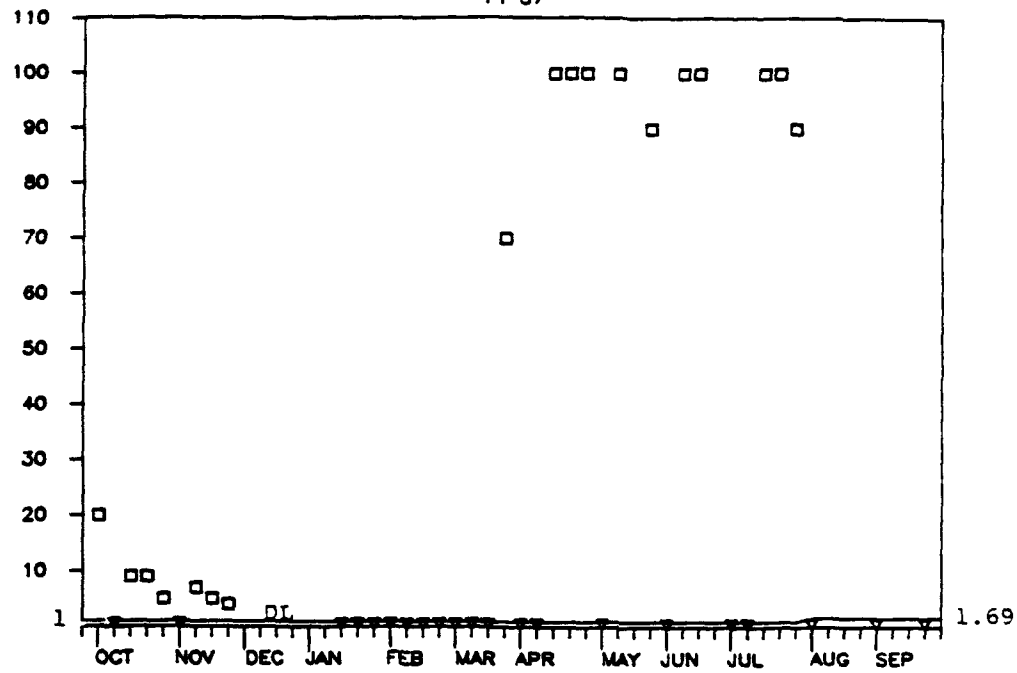


Figure 10. (concluded)

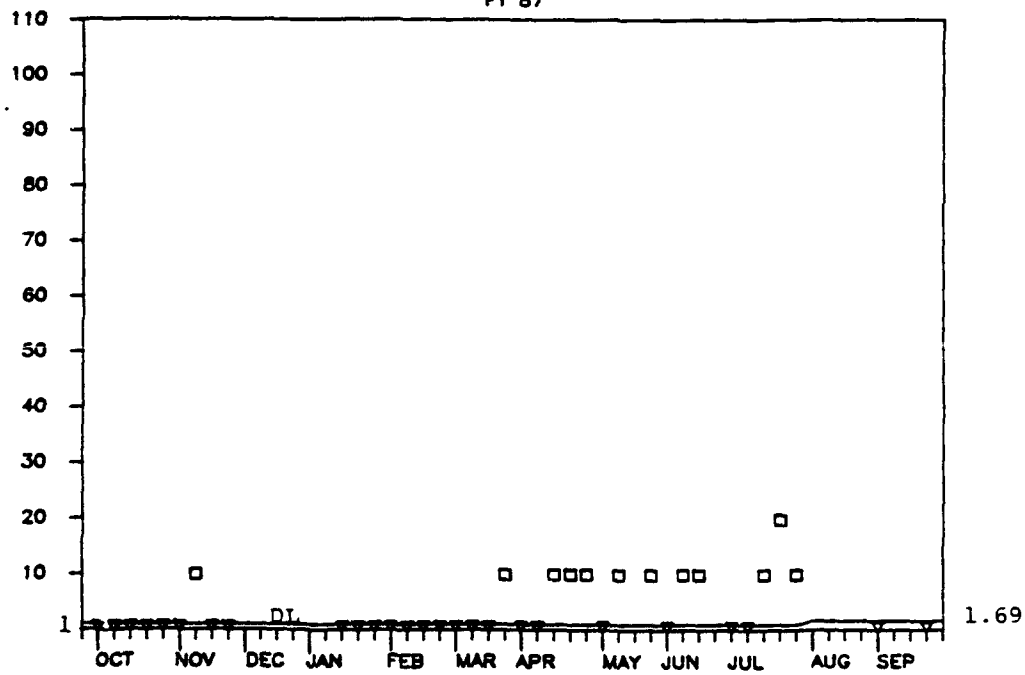
ADSORBER A INFLUENT -- CCL4

CONCENTRATION (UG/L)



ADSORBER B INFLUENT -- CCL4

CONCENTRATION (UG/L)



30

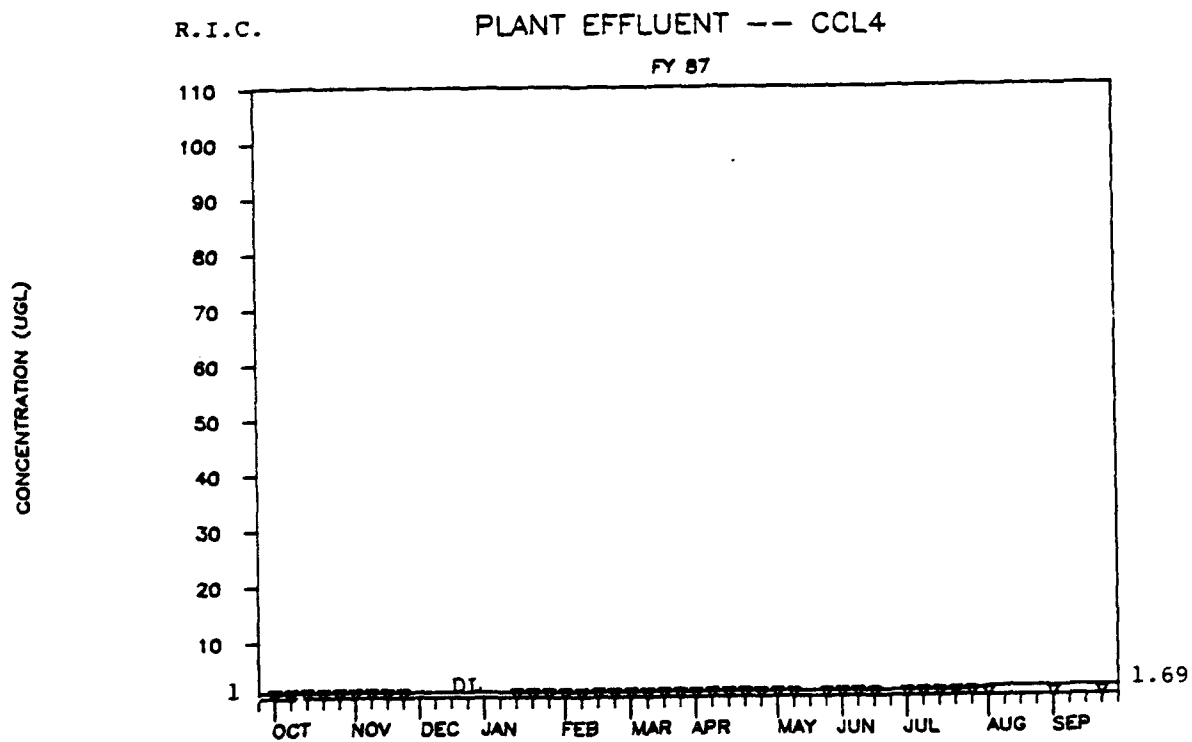
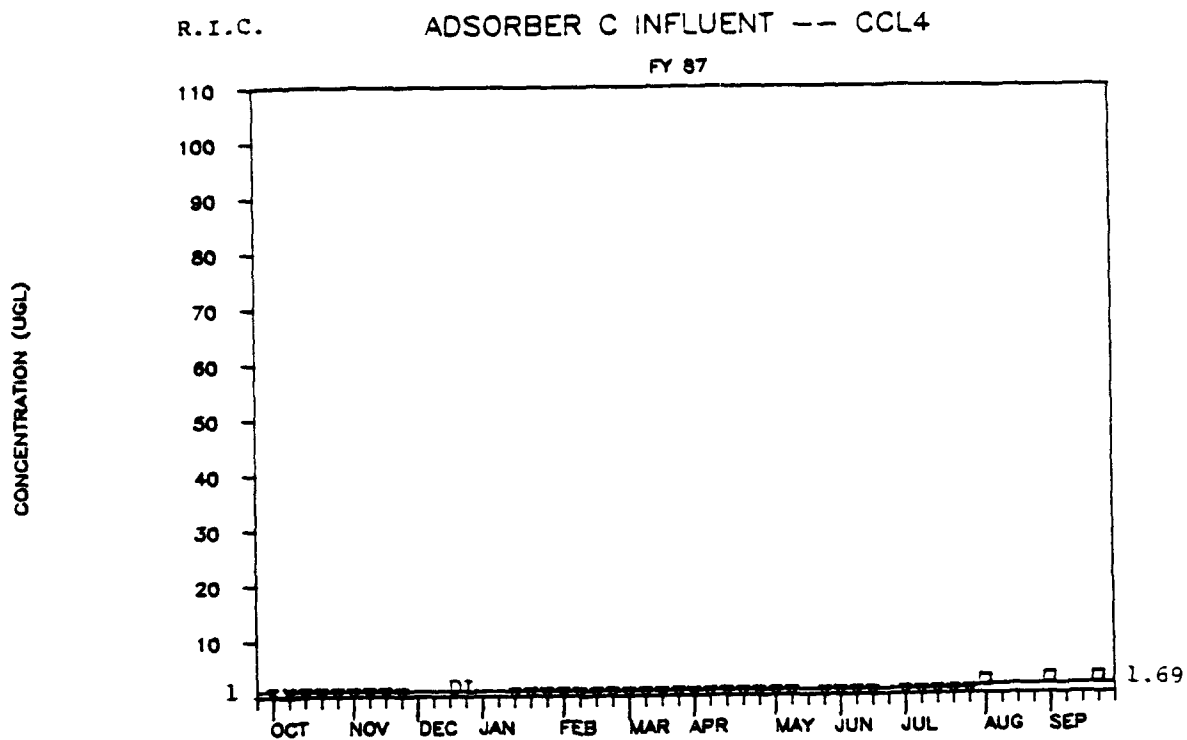


Figure 11. (concluded)

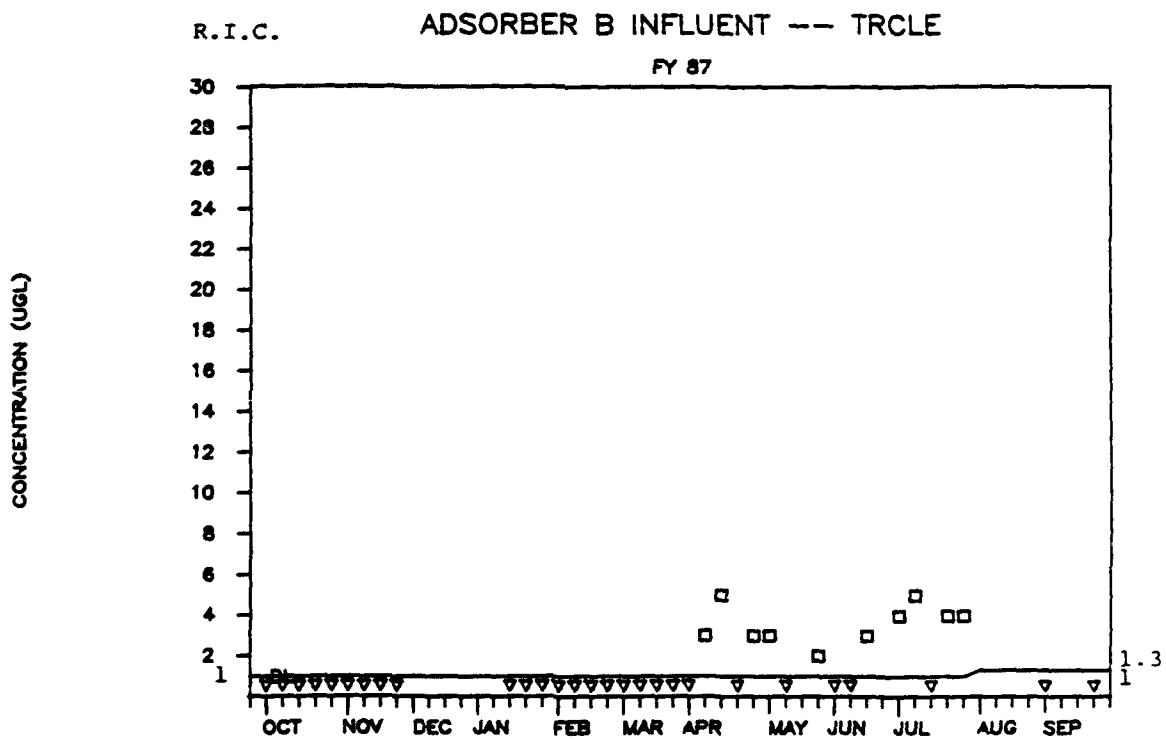
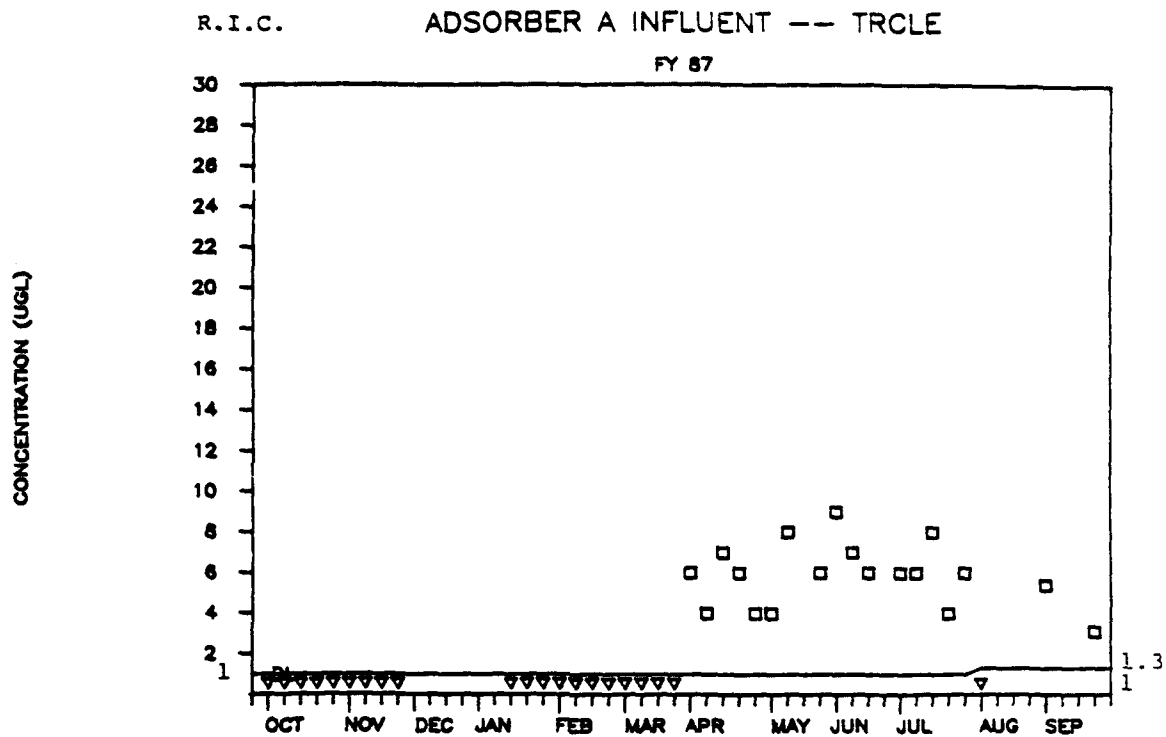


Figure 12. FY87 Trichloroethylene (continued)

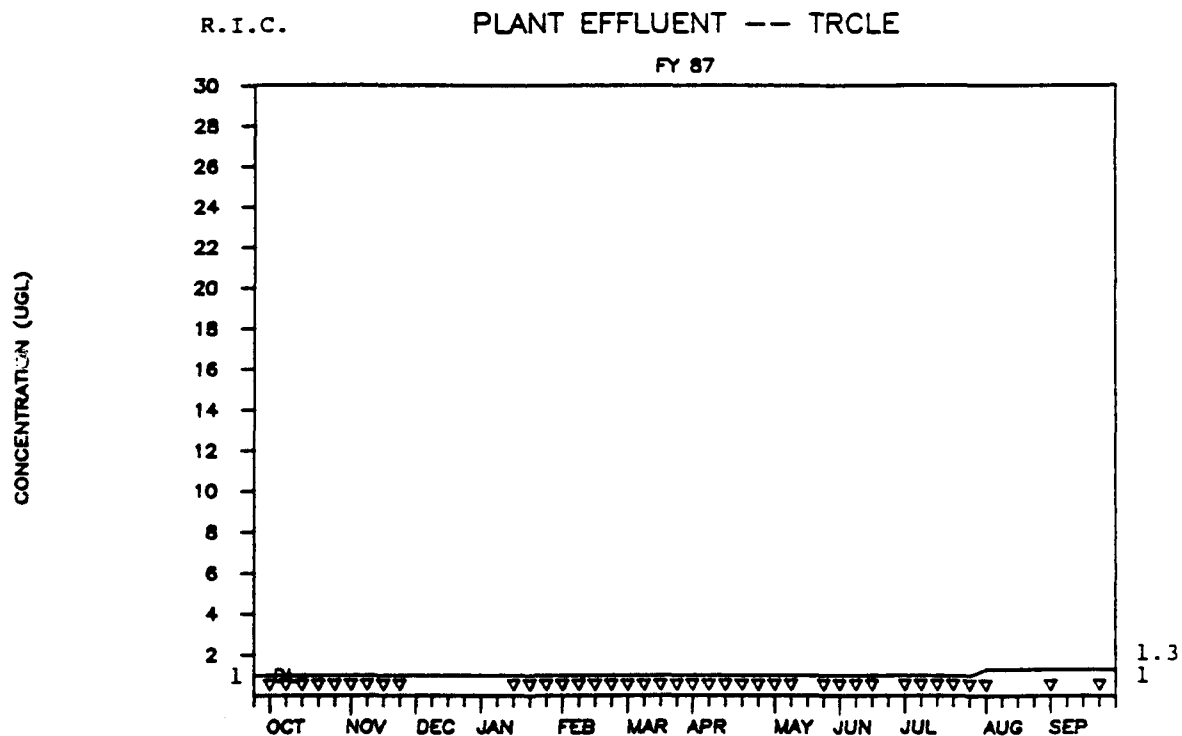
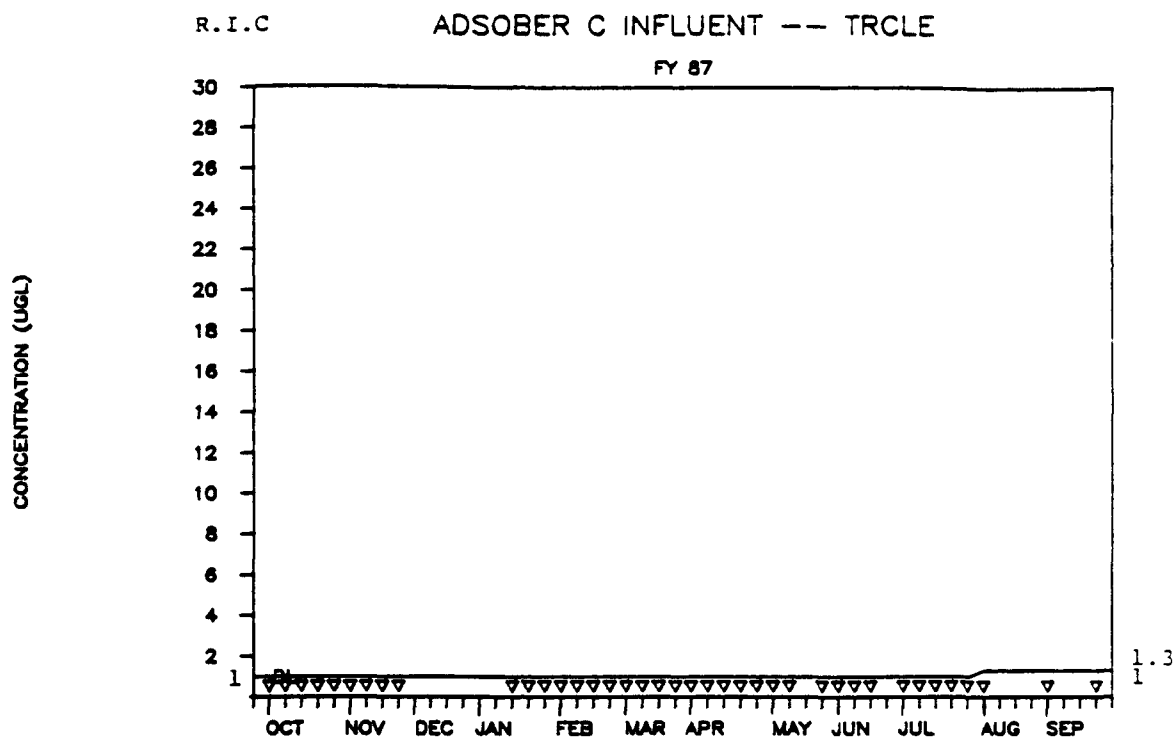


Figure 12. (concluded)

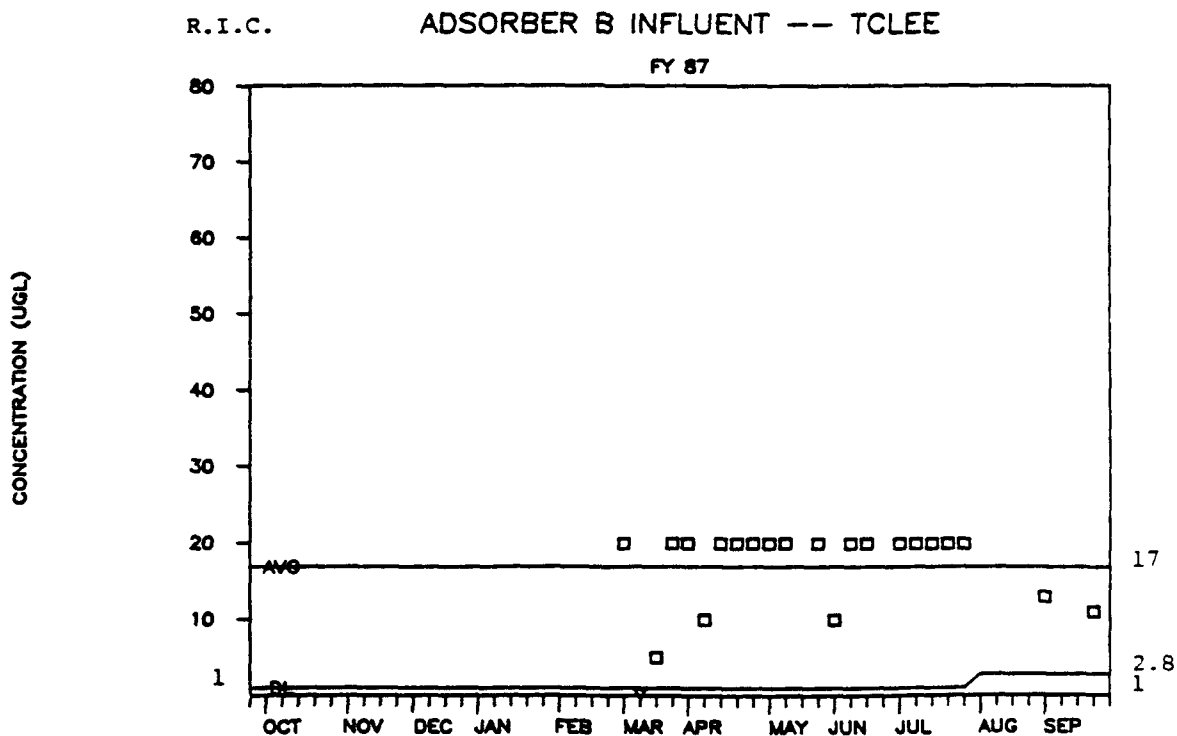
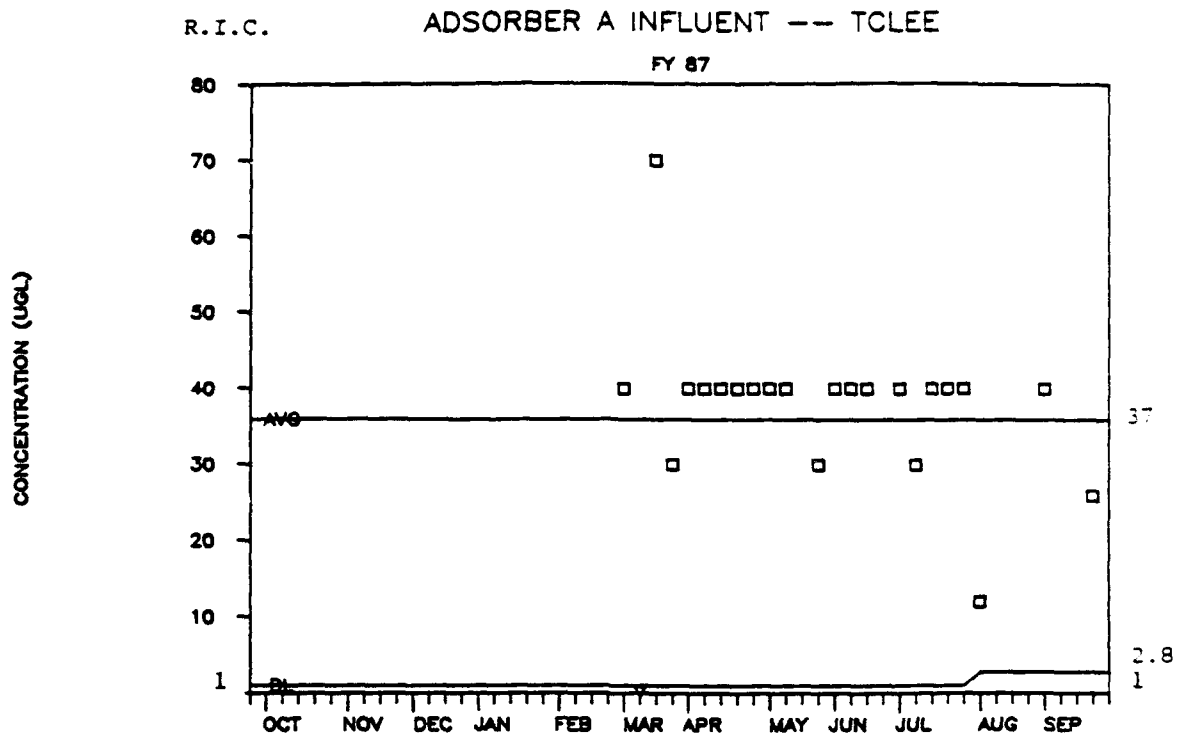


Figure 13. FY87 Tetrachloroethylene (continued)

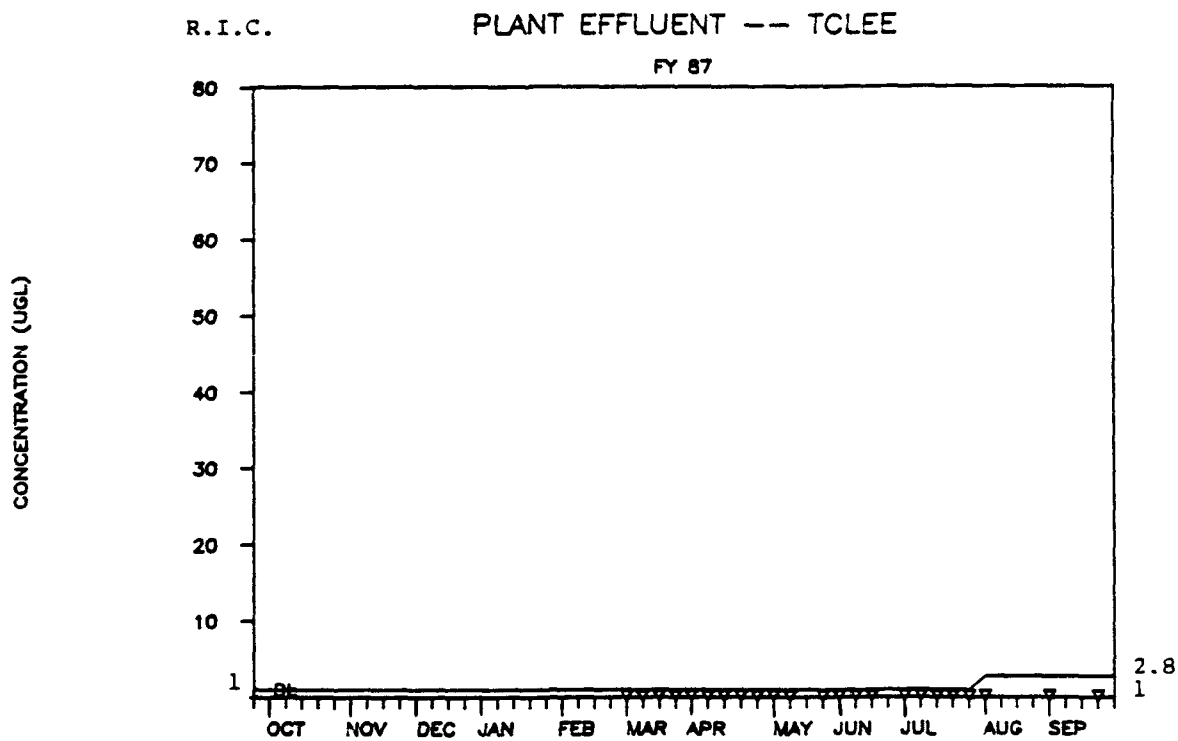
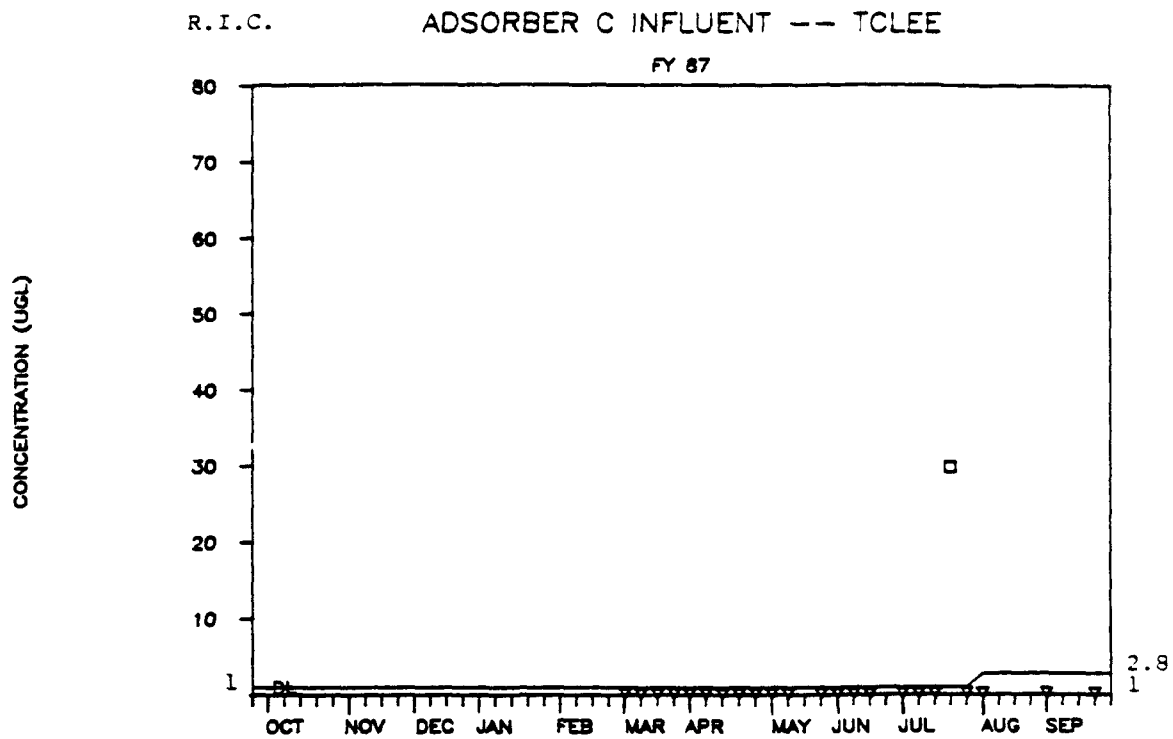
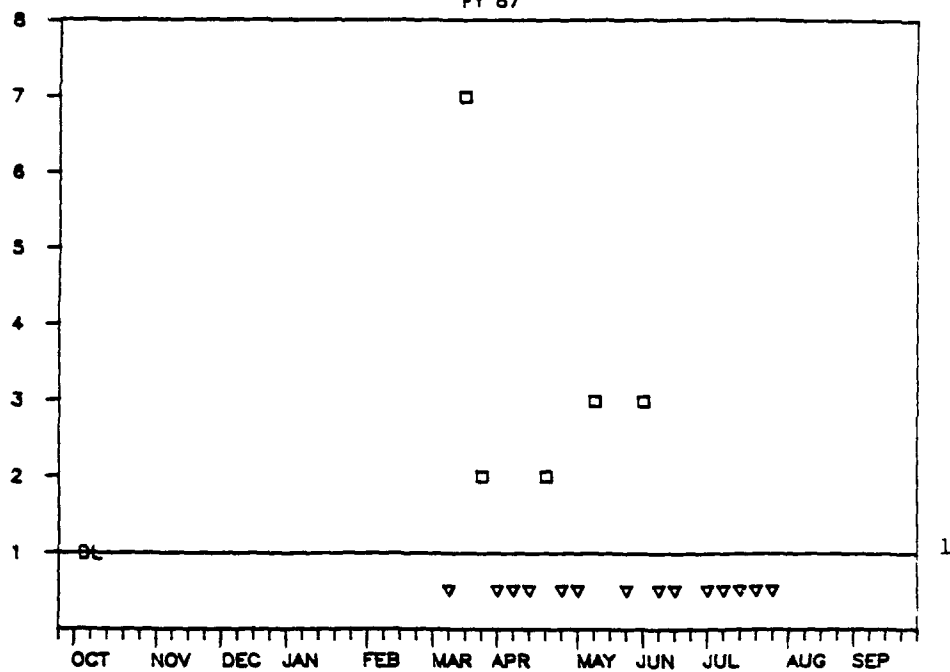


Figure 13. (concluded)

ADSORBER A INFLUENT -- 12DCE

CONCENTRATION (UG/L)



ADSORBER B INFLUENT -- 12DCE

CONCENTRATION (UGL)

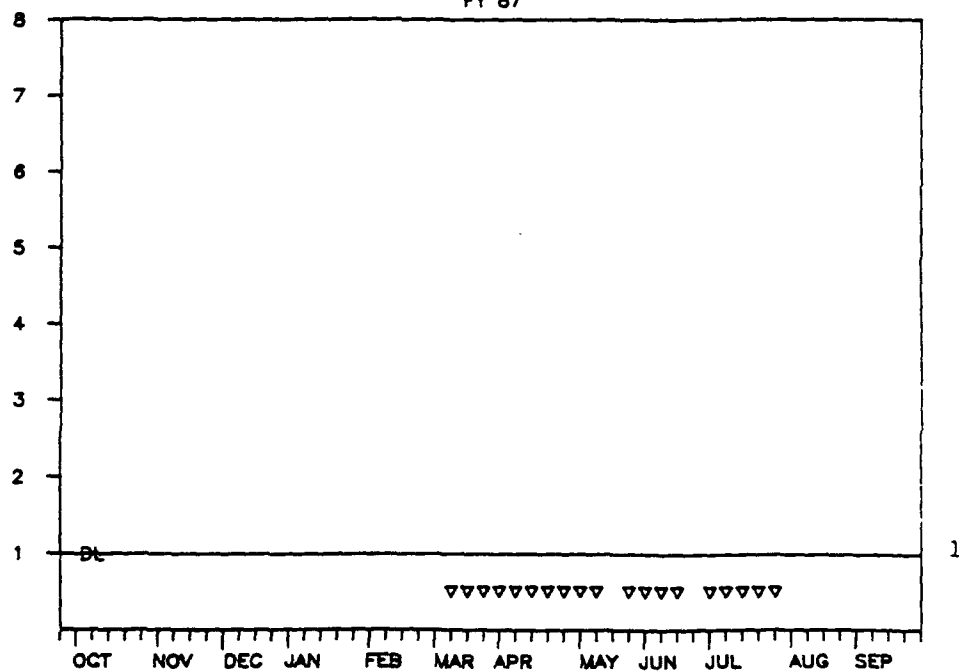


Figure 14. FY87 1,2 Dichloroethane (continued)

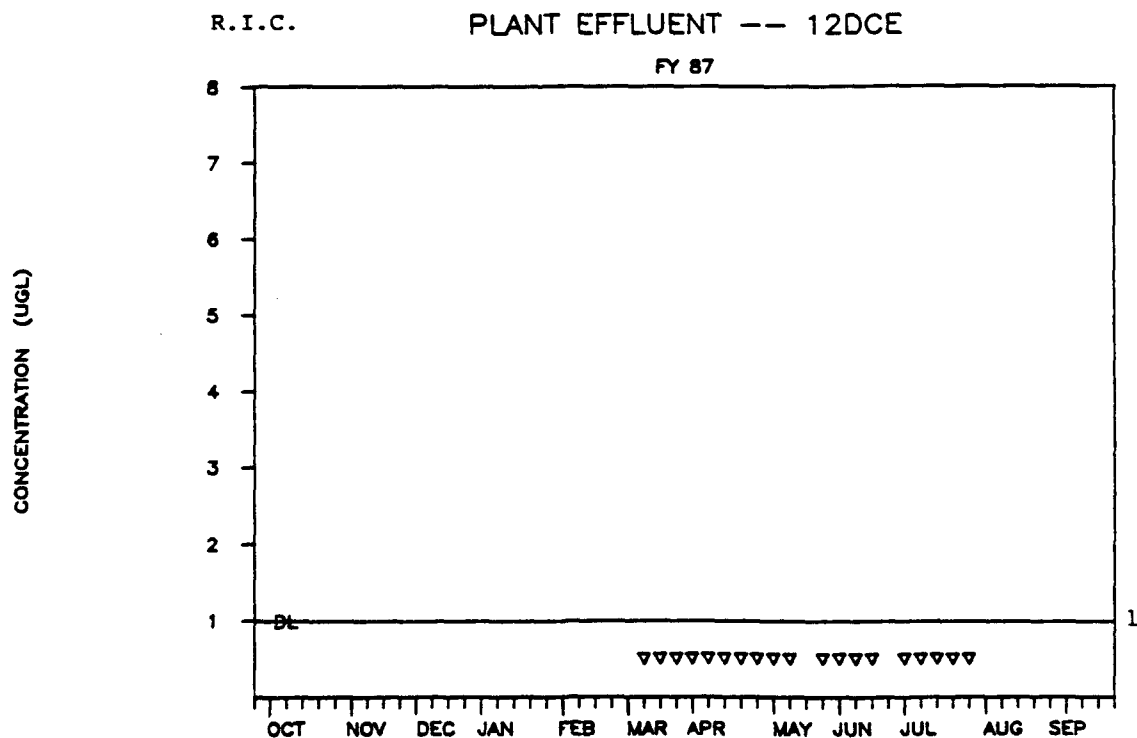
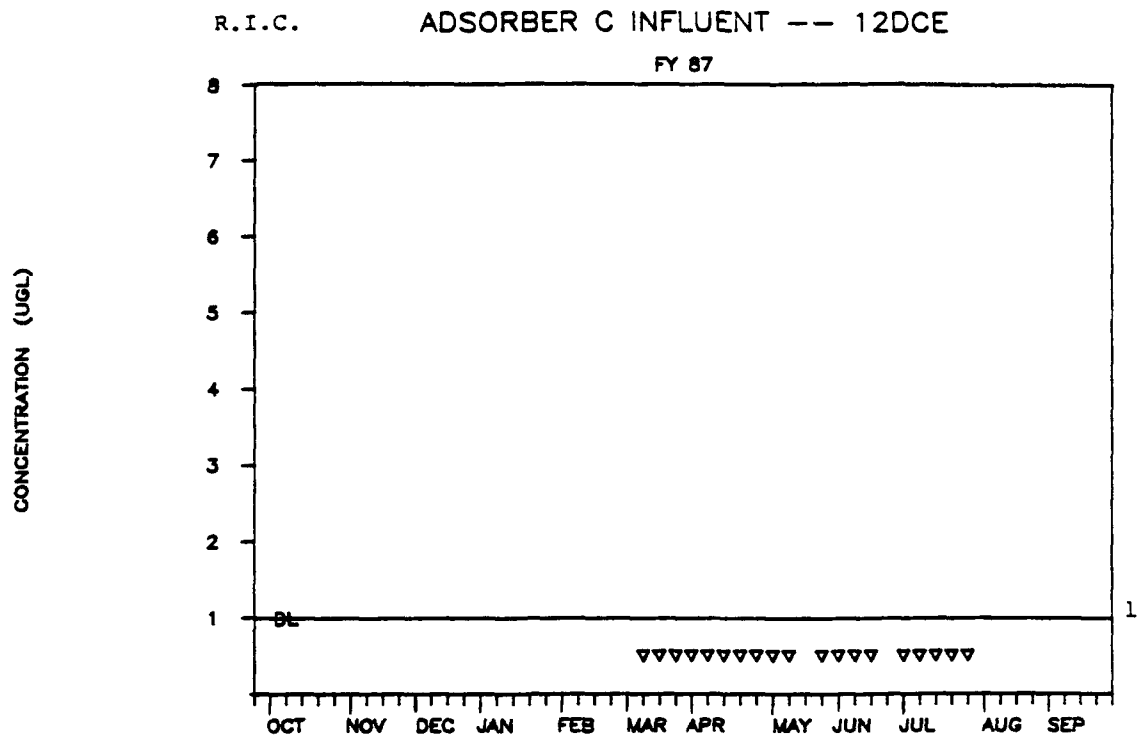


Figure 14. (concluded)

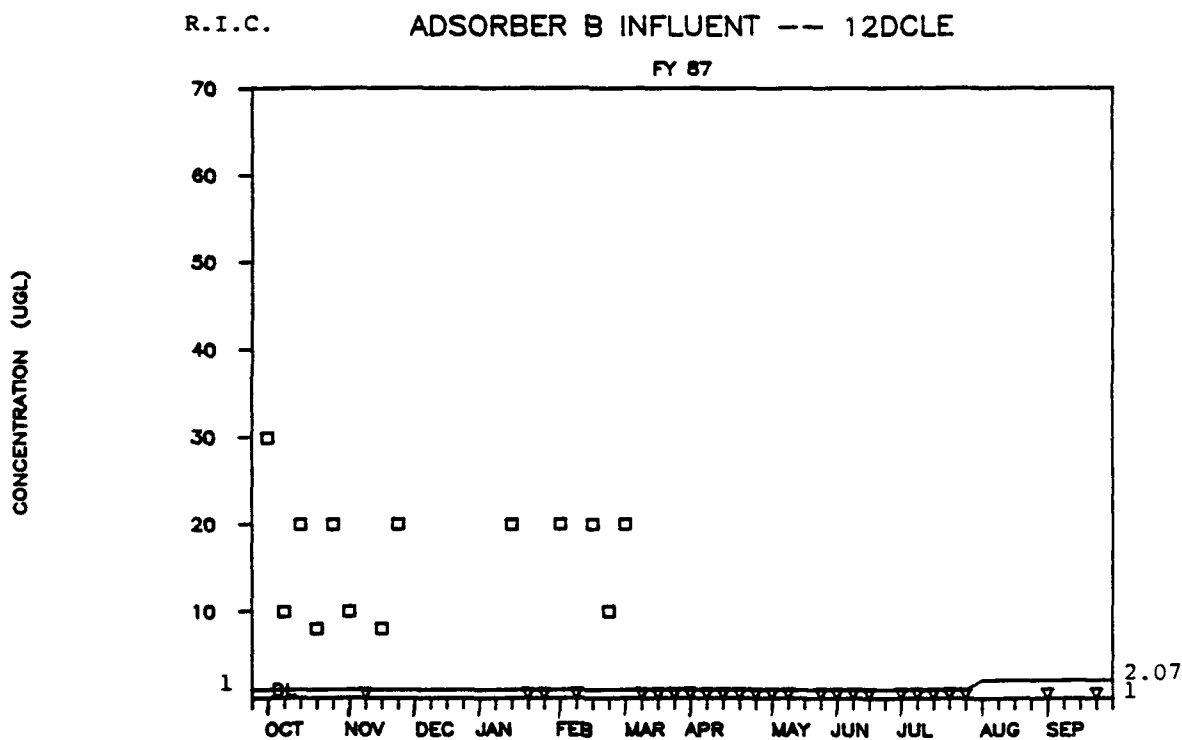
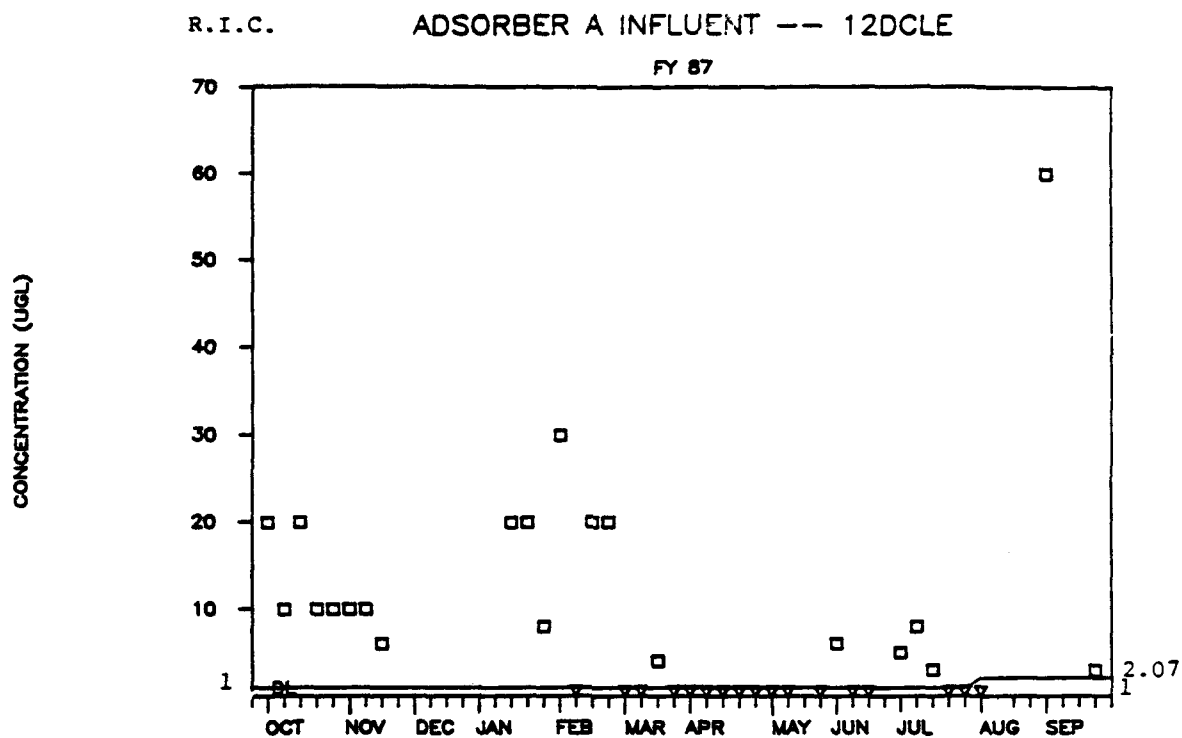


Figure 15. FY87 1,2 Dichloroethylene (continued)

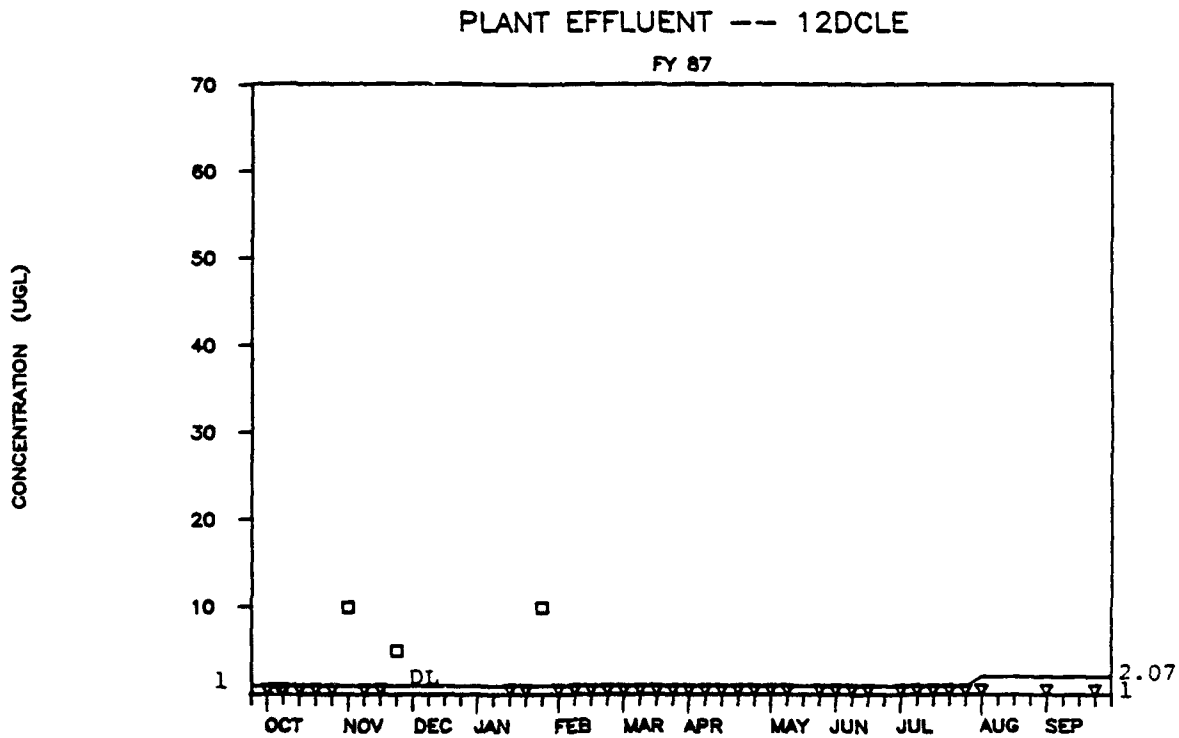
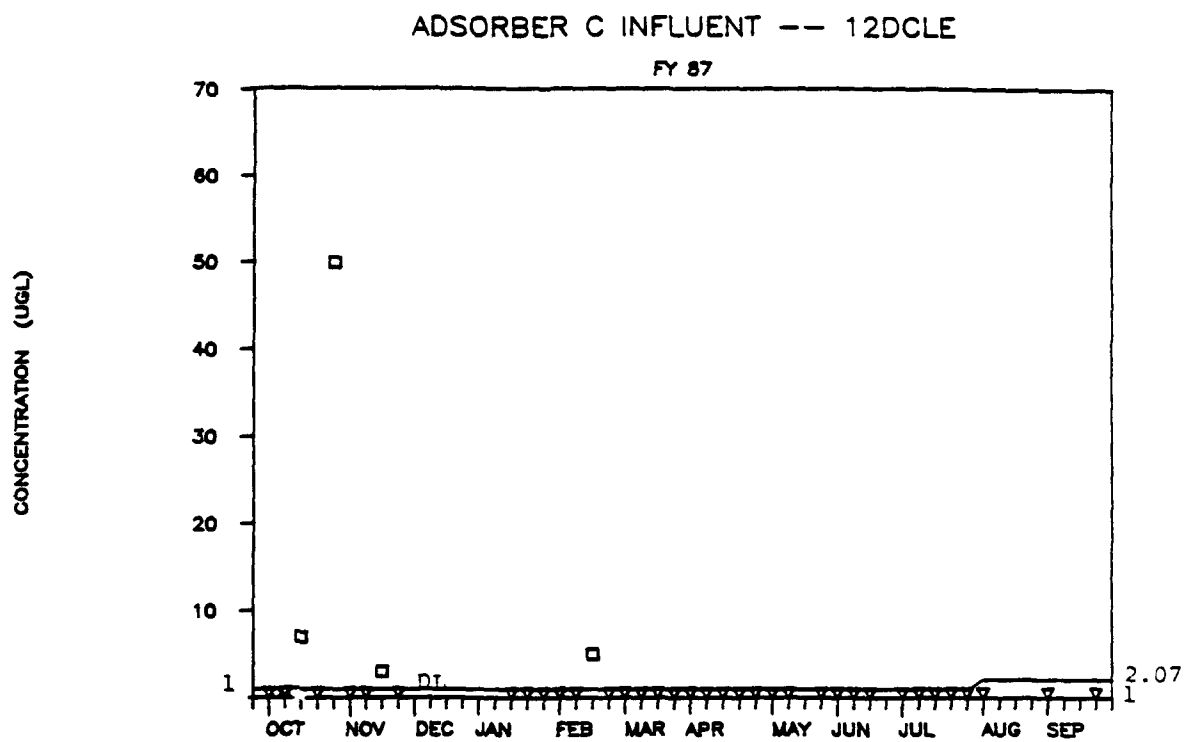


Figure 15. (concluded)

FY 87

110
100
90
80
70
60
50
40
30
20
10

MGL
DL

100
60
5.3

OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP

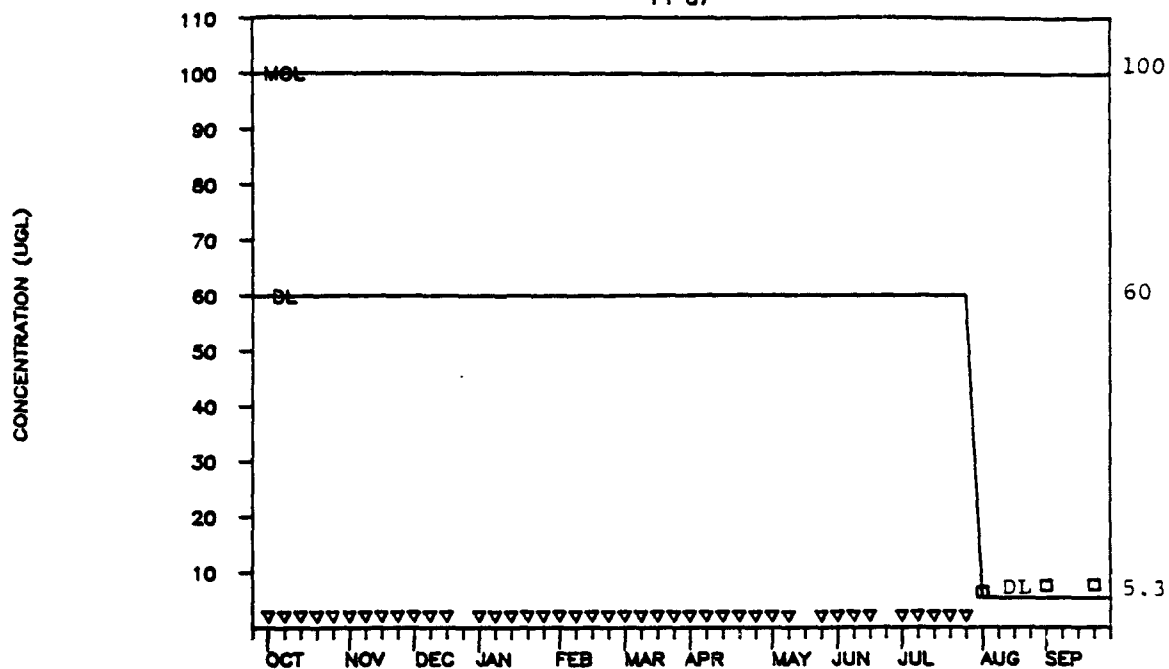
FY 87

Month	MGL (Left Axis)	DL (Left Axis)	DL (Right Axis)	Peaks (Squares)	Troughs (Triangles)
OCT	100	60	60	~1	~1
NOV	100	60	60	~1	~1
DEC	100	60	60	~1	~1
JAN	100	60	60	~1	~1
FEB	100	60	60	~1	~1
MAR	100	60	60	~68, ~70	~1
APR	100	60	60	~64, ~61, ~61	~1
MAY	100	60	60	~1	~1, ~1, ~1, ~1
JUN	100	60	60	~1	~1, ~1, ~1
JUL	100	60	60	~1	~1, ~1, ~1, ~1
AUG	100	5.3	5.3	~1	~1, ~1, ~1
SEP	100	5.3	5.3	~28, ~33	~1

40

R.I.C. ADS. C INFLUENT -- COMB. ORGANO-SULFUR

FY 87



R.I.C. PLANT EFFLUENT -- COMB. ORGANO-SULFUR

FY 87

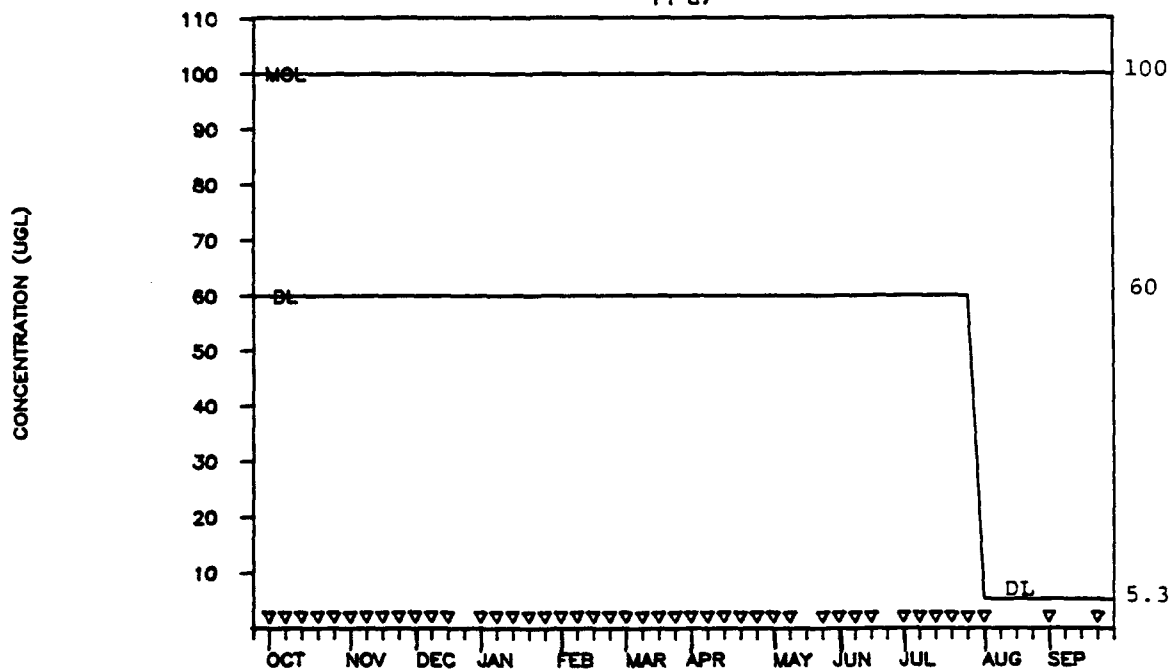


Figure 16. (concluded)

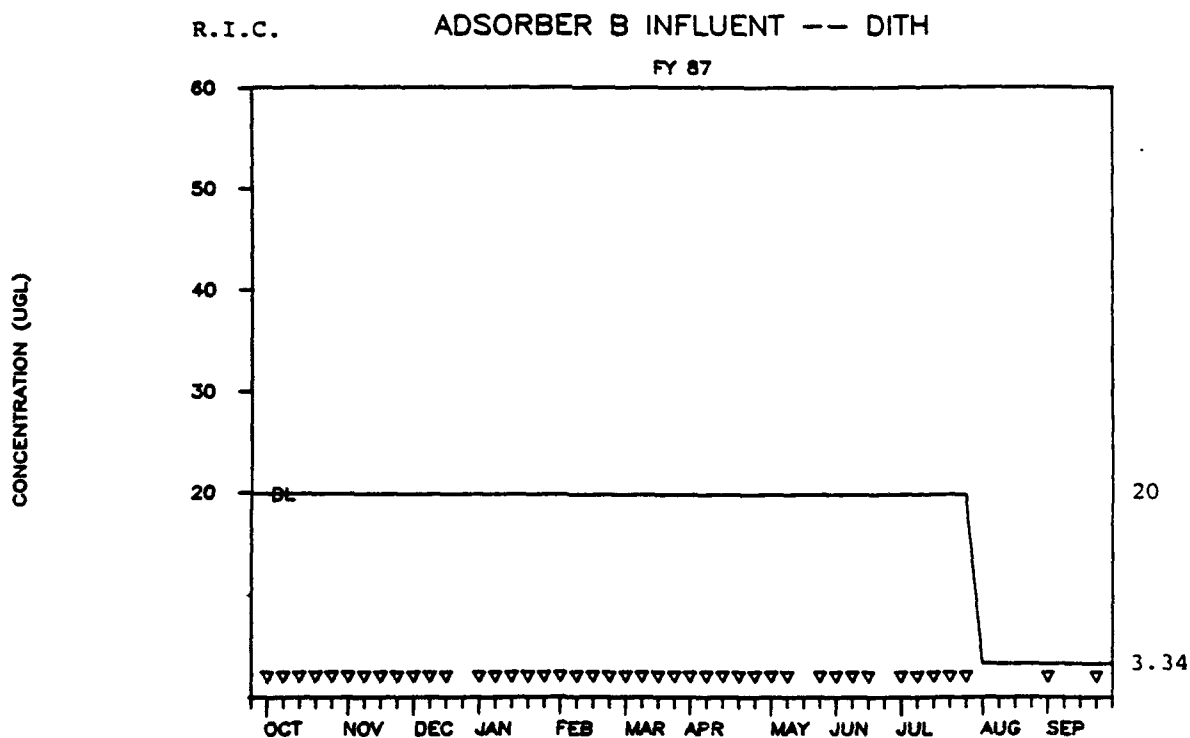
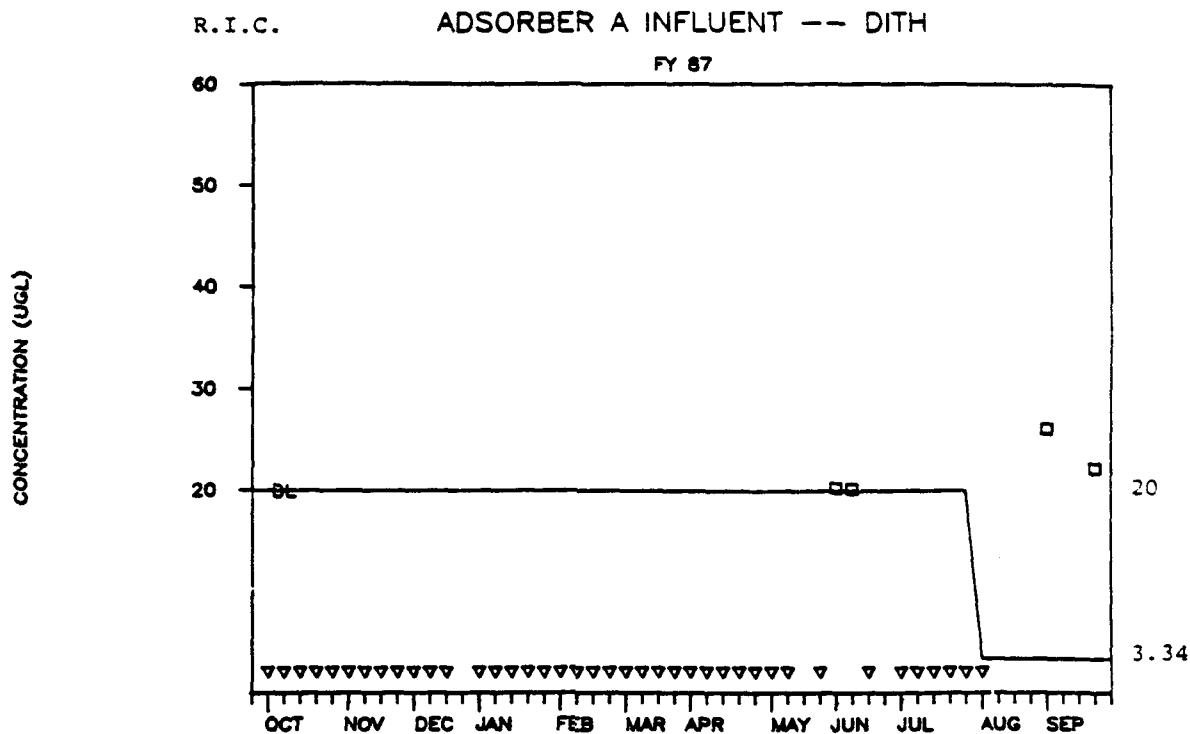


Figure 17. FY87 Dithiane (continued)

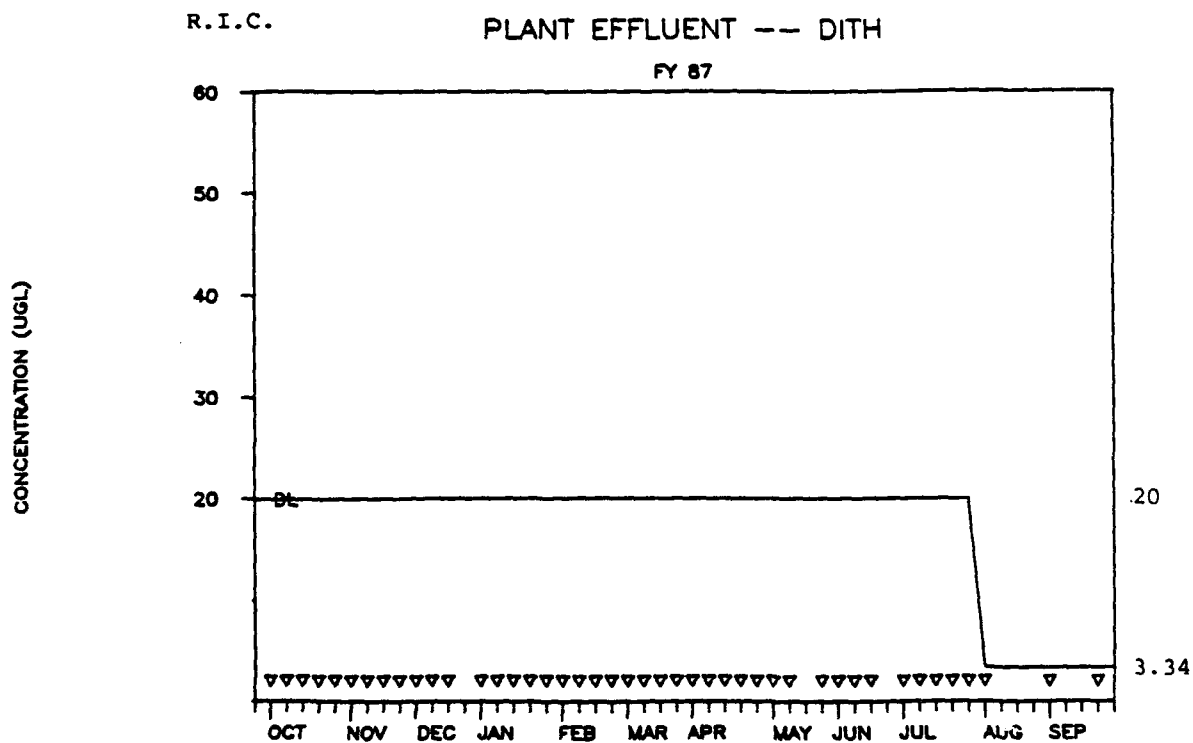
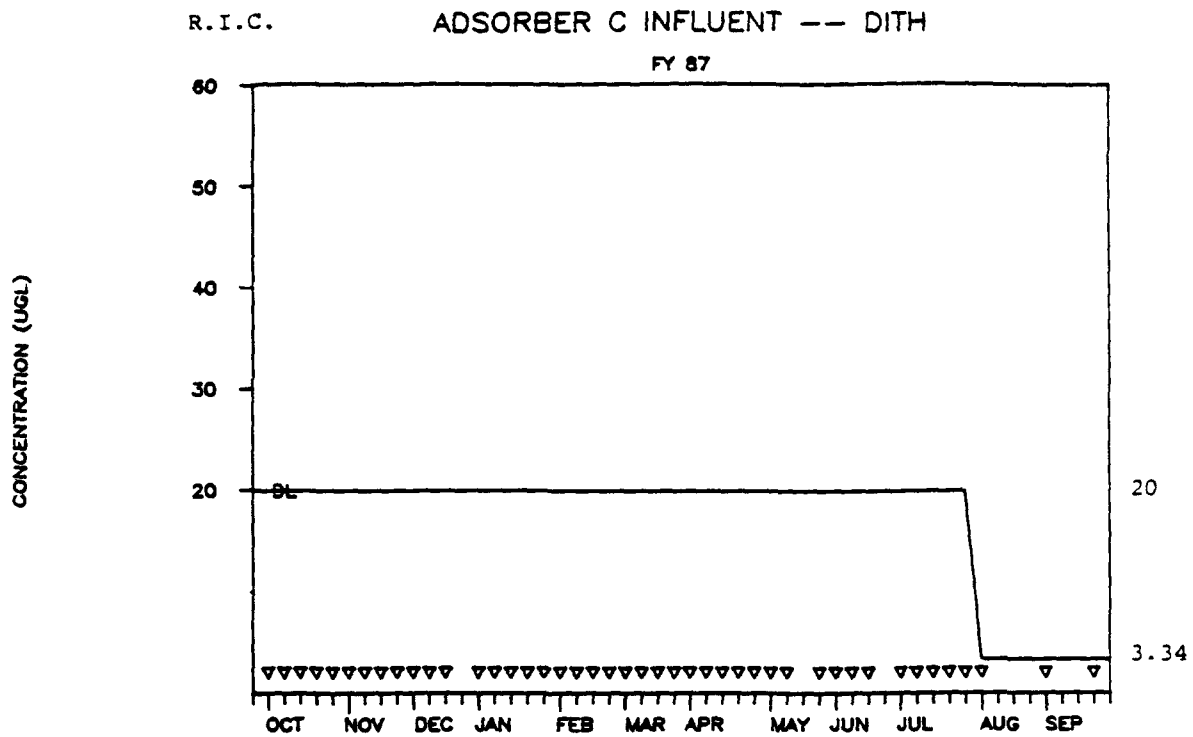


Figure 17. (concluded)

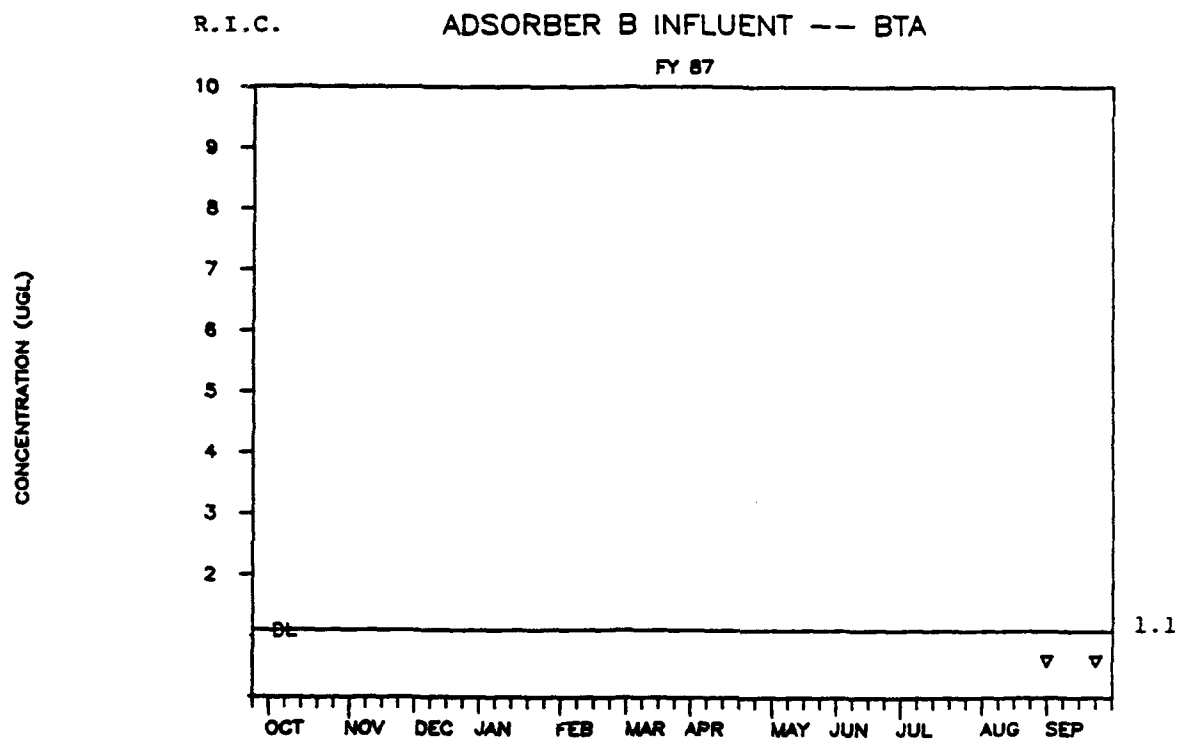
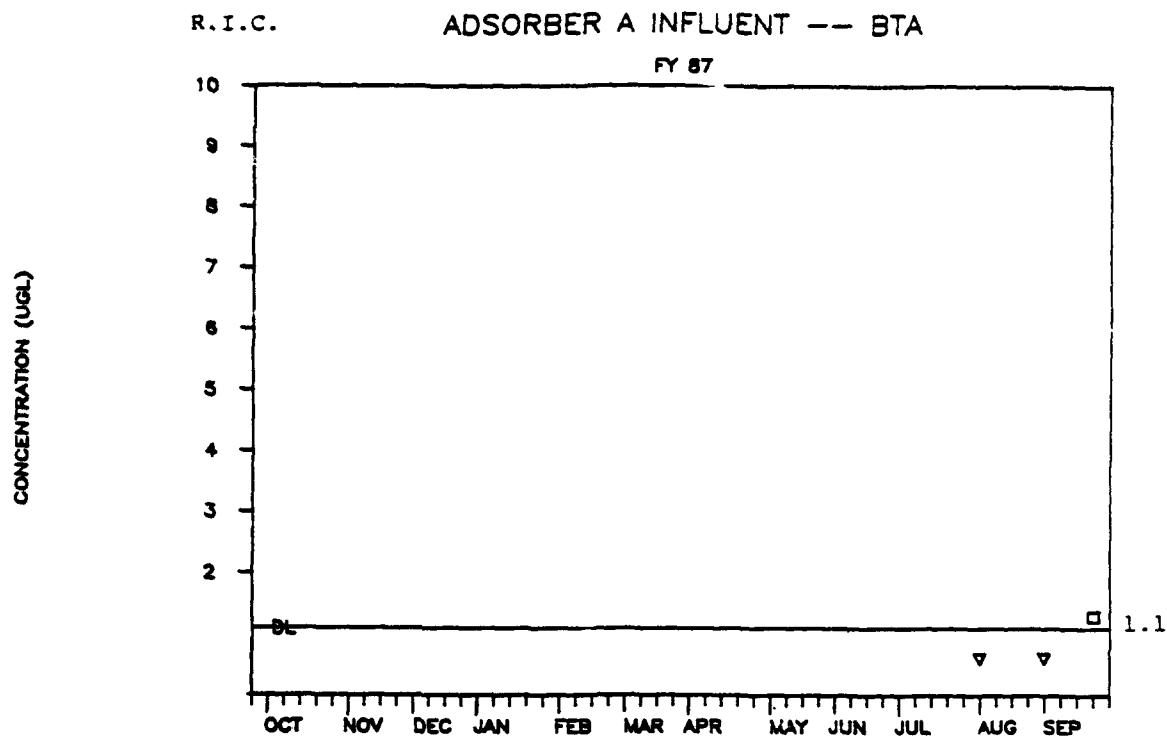


Figure 18. FY 87 Benzothiazole (continued)

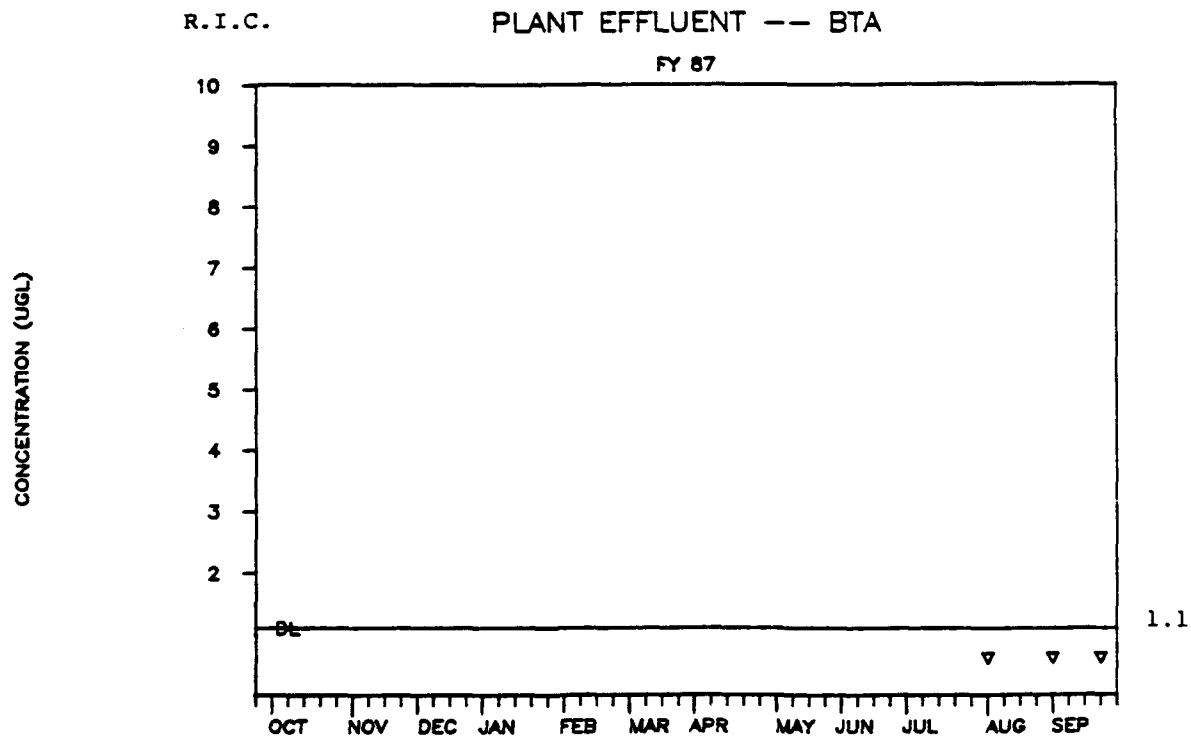
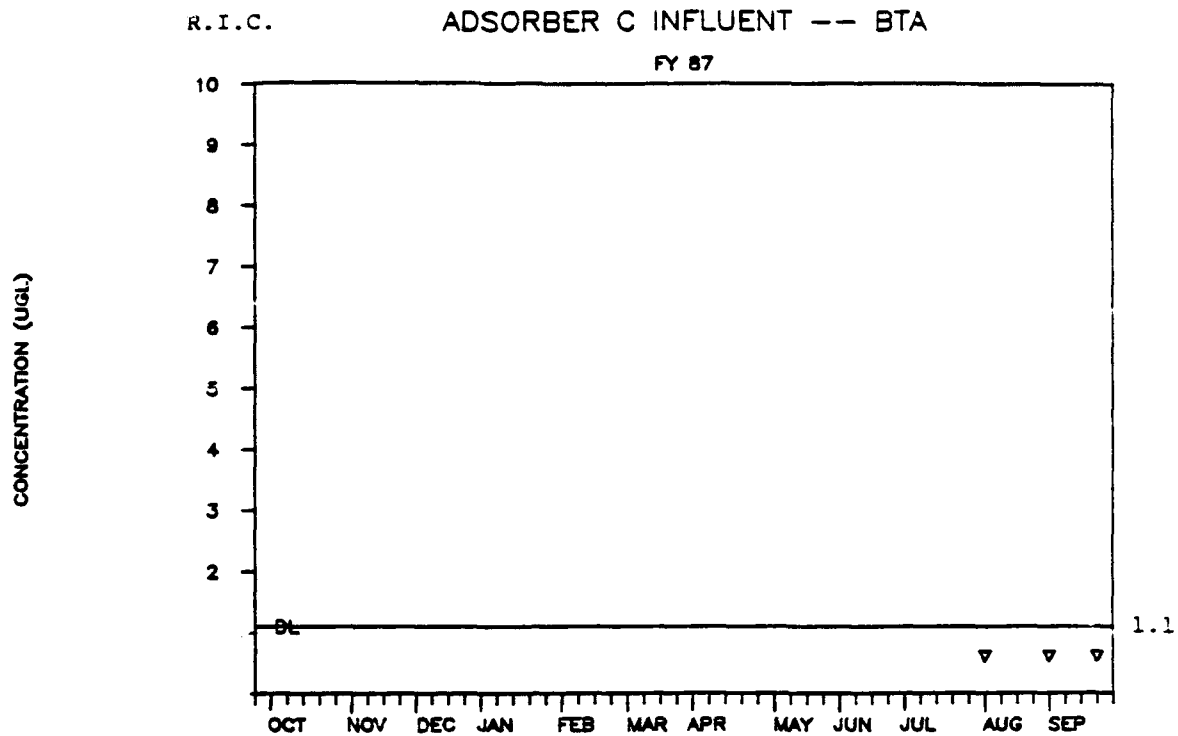


Figure 18. (concluded)

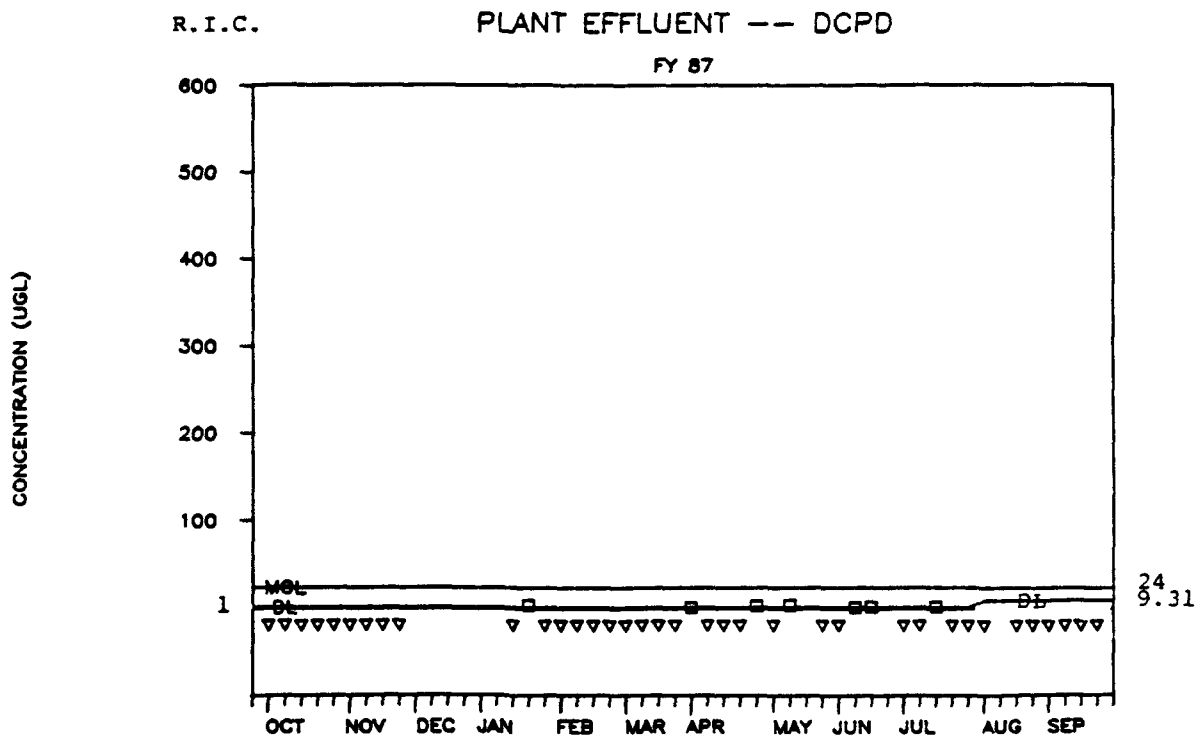
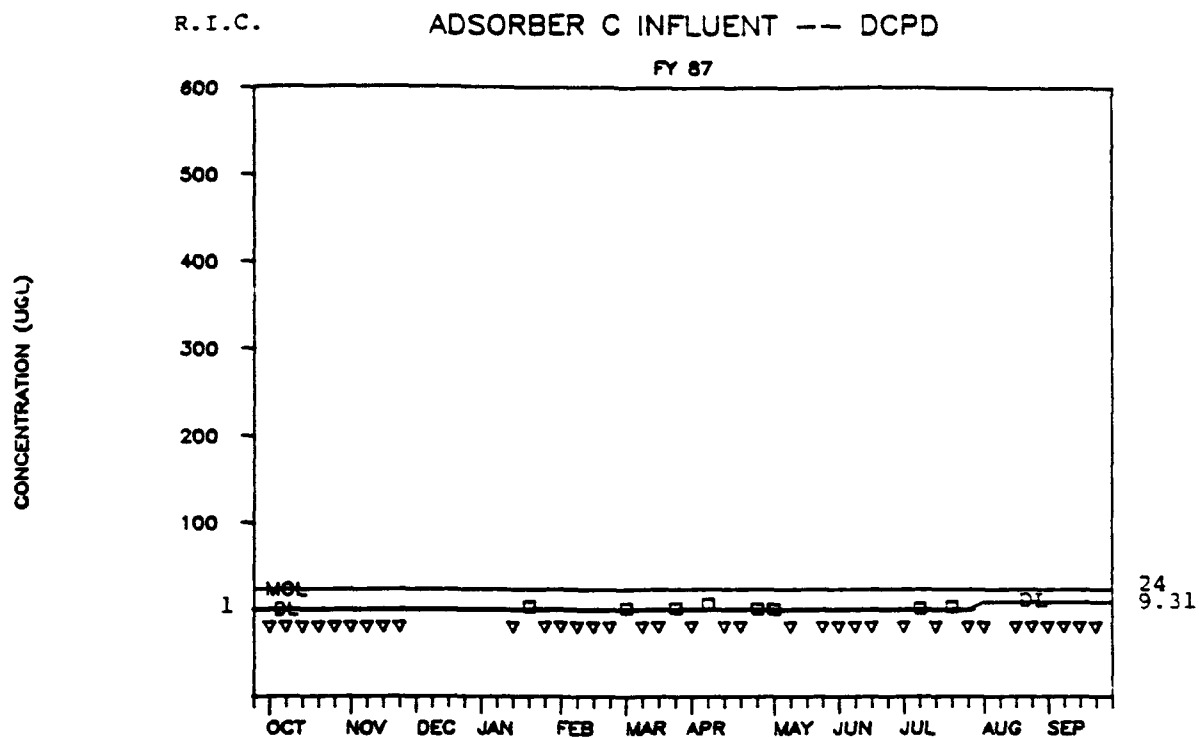


Figure 19. (concluded)

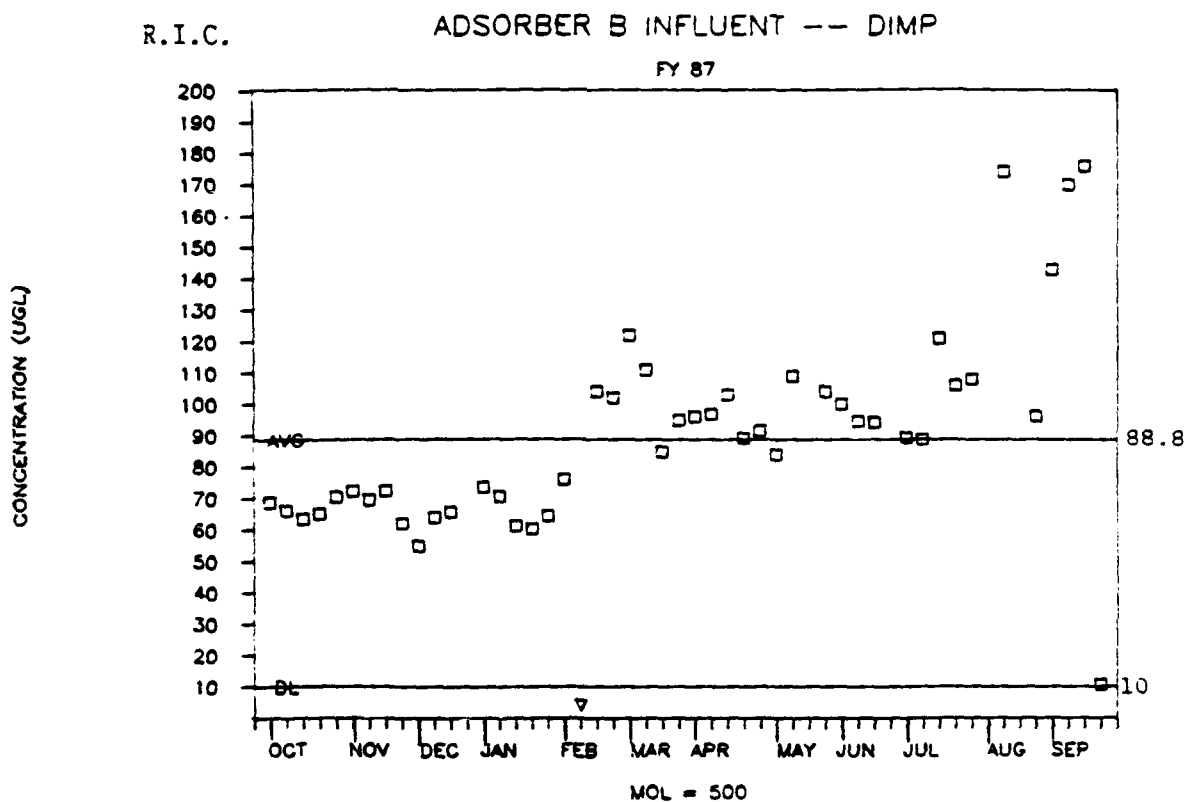
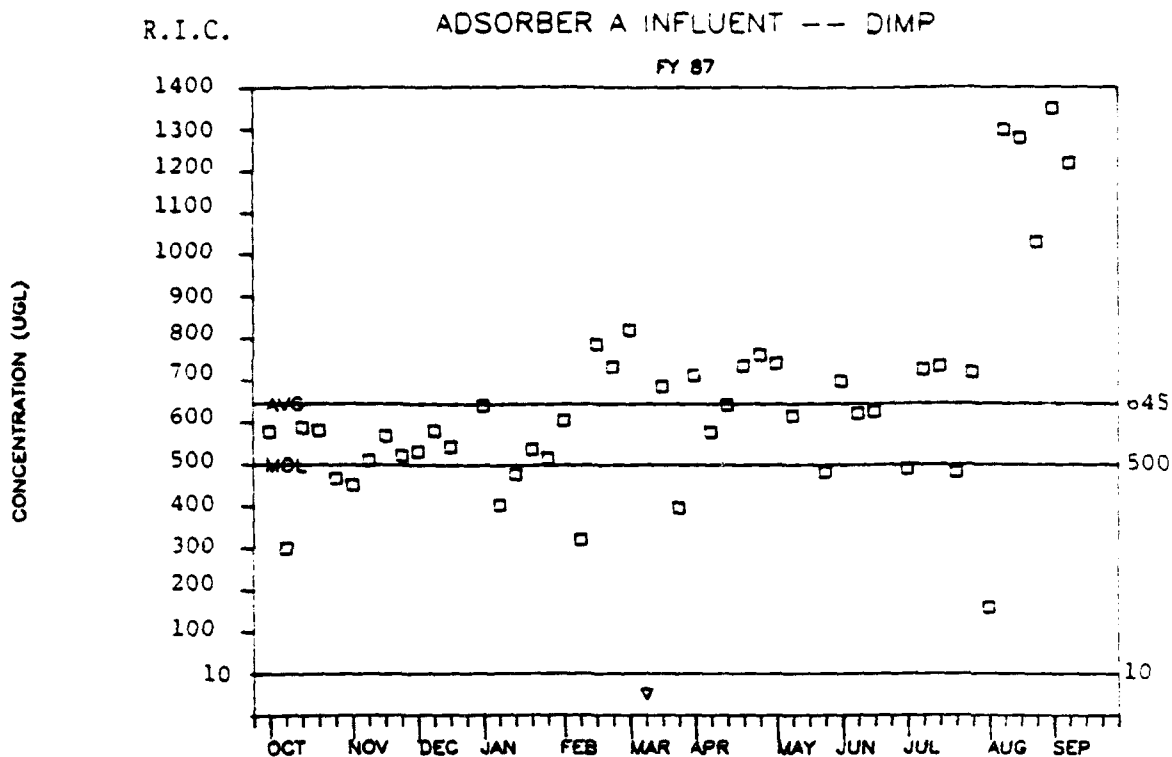


Figure 20. FY87 Diisopropylmethylphosphorate (continued)

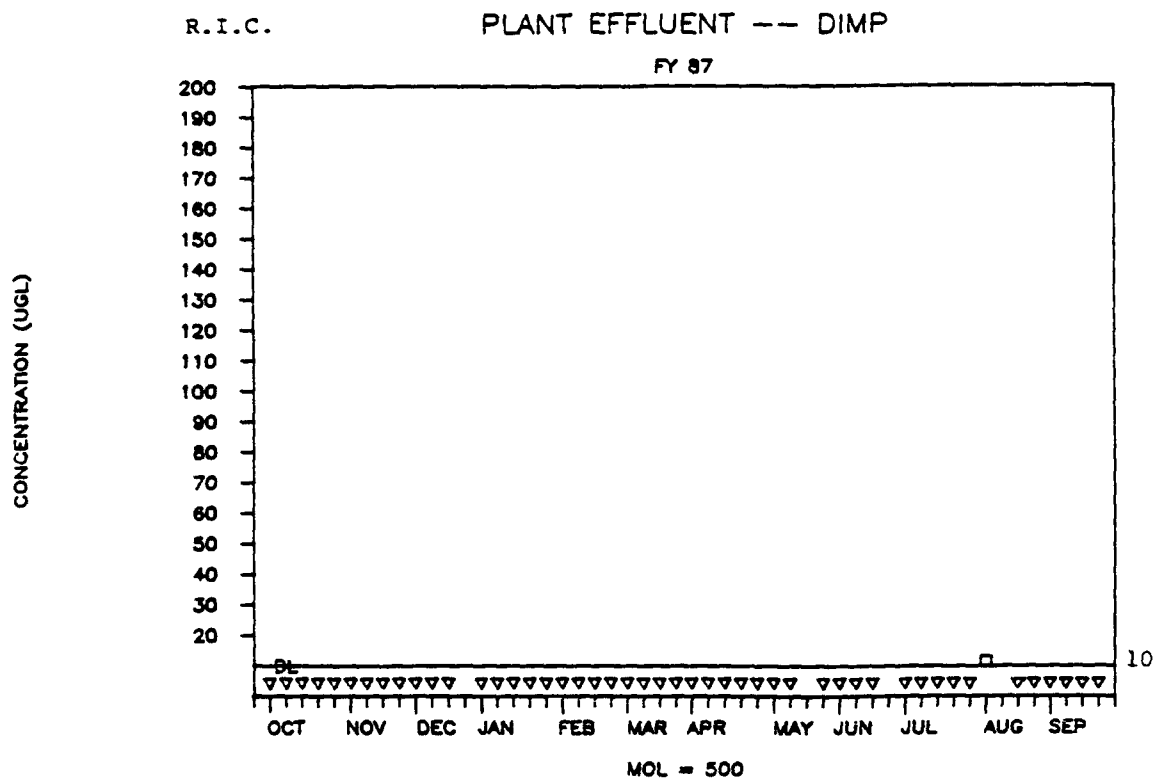
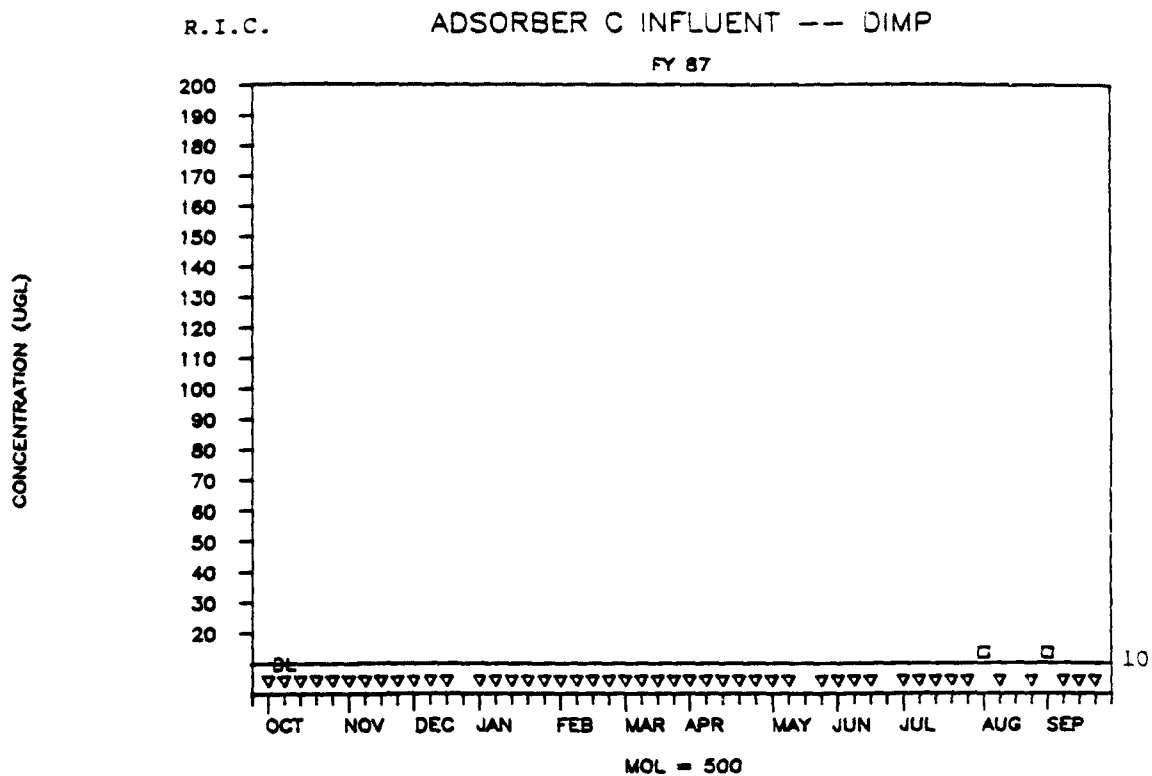
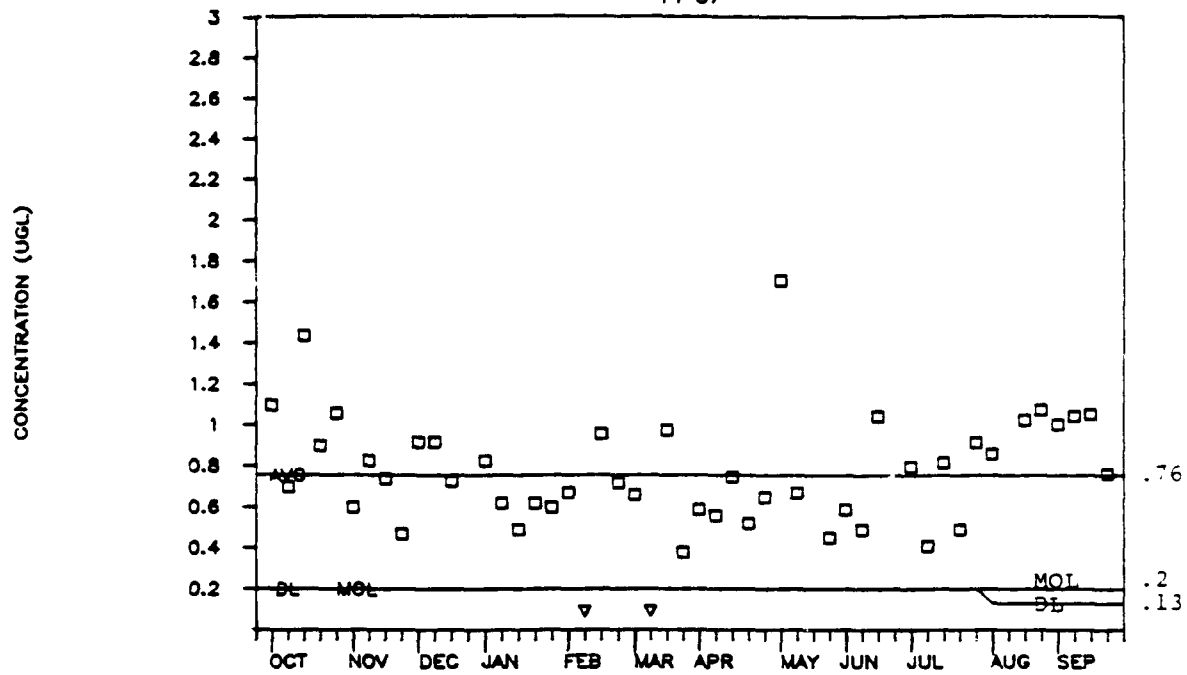


Figure 20. (concluded)

R.I.C.

ADSORBER A INFLUENT -- DBCP

FY 87



R.I.C.

ADSORBER B INFLUENT -- DBCP

FY 87

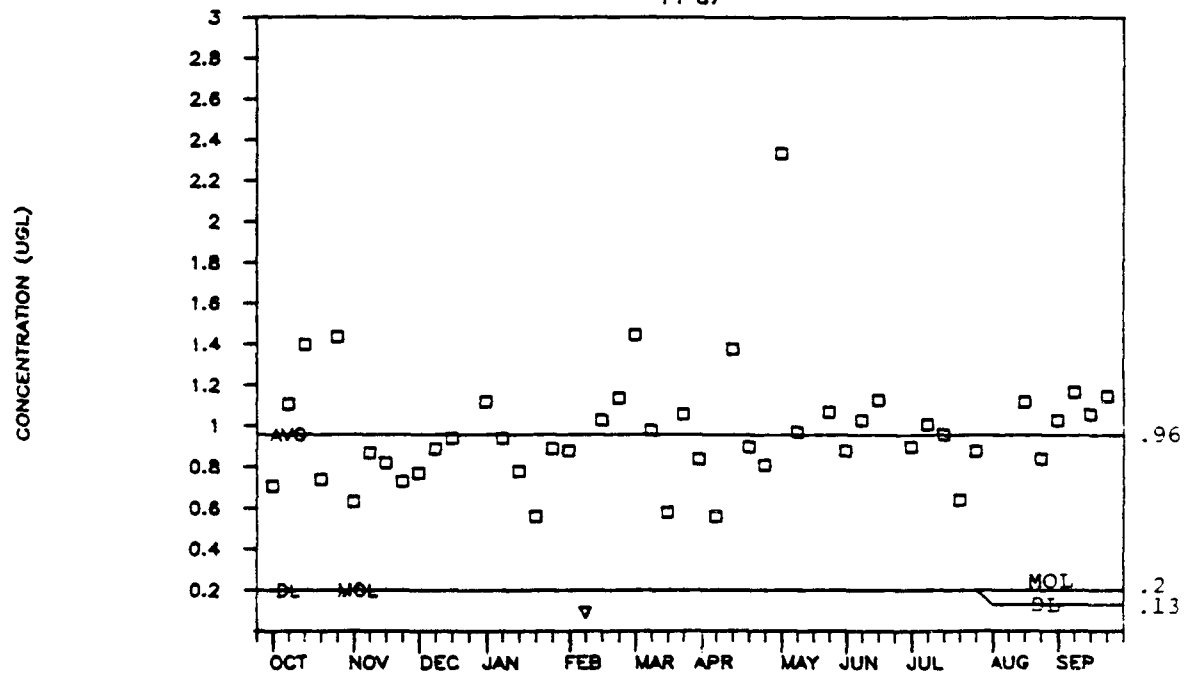


Figure 21. FY87 Dibromochloropropane (continued)

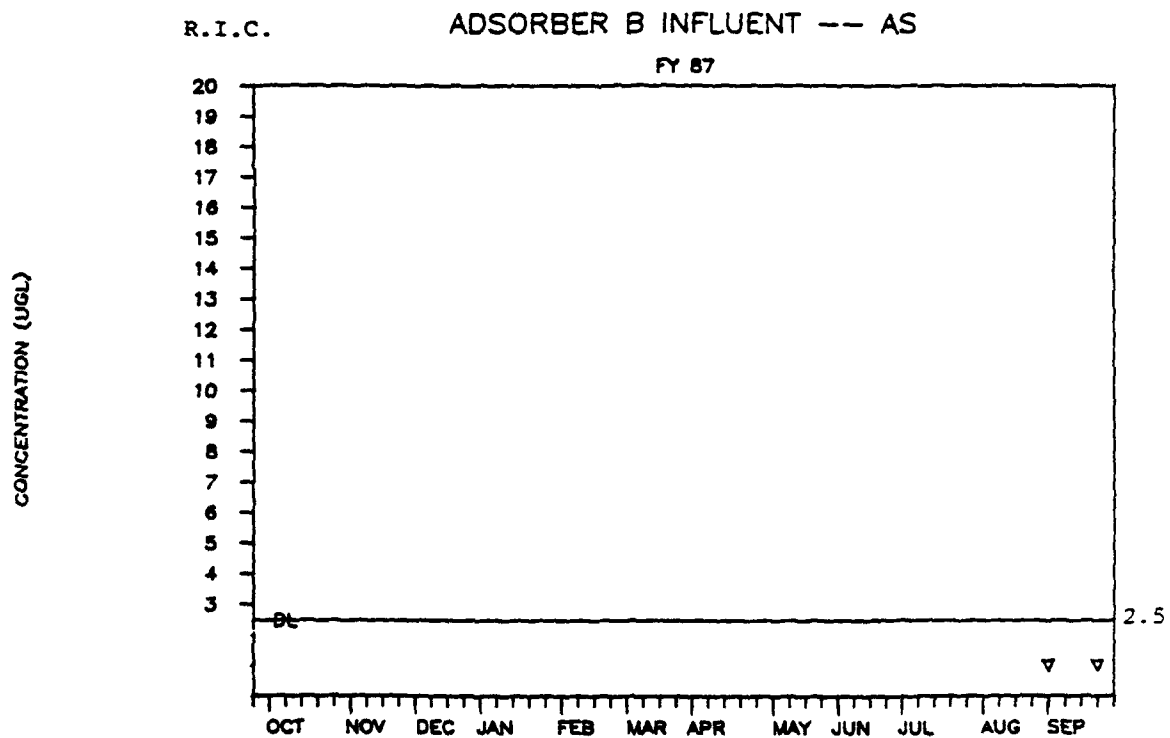
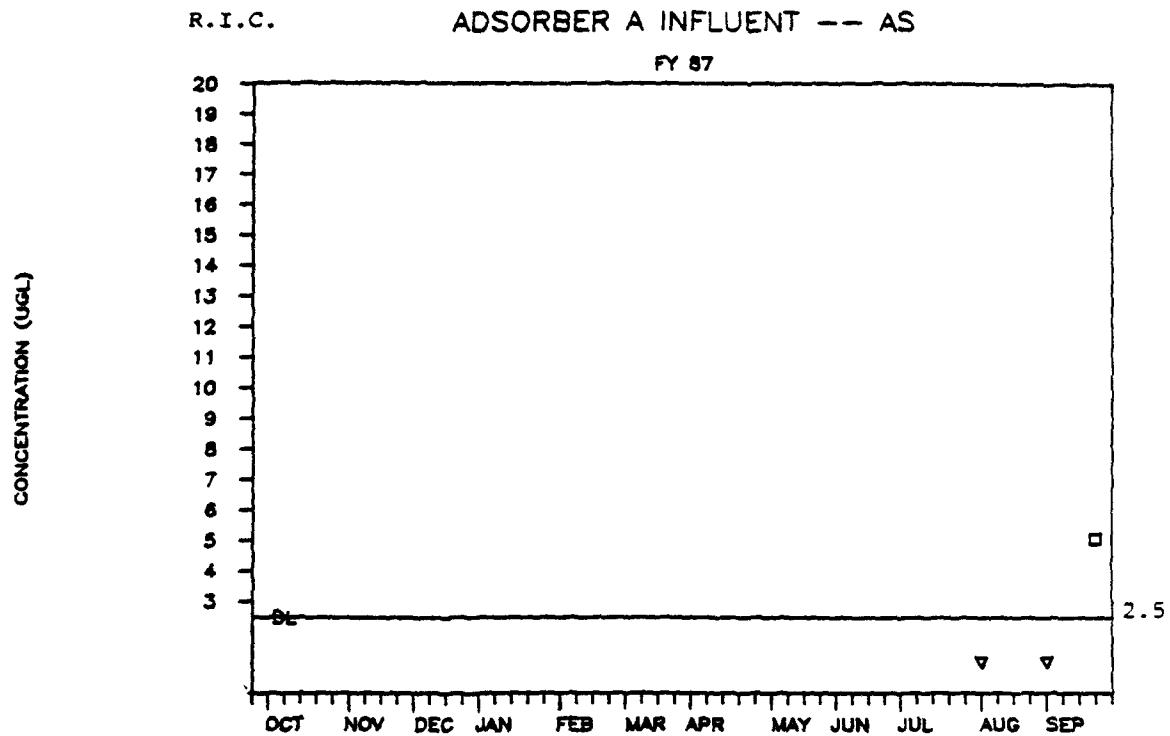


Figure 22. FY87 Arsenic (continued)

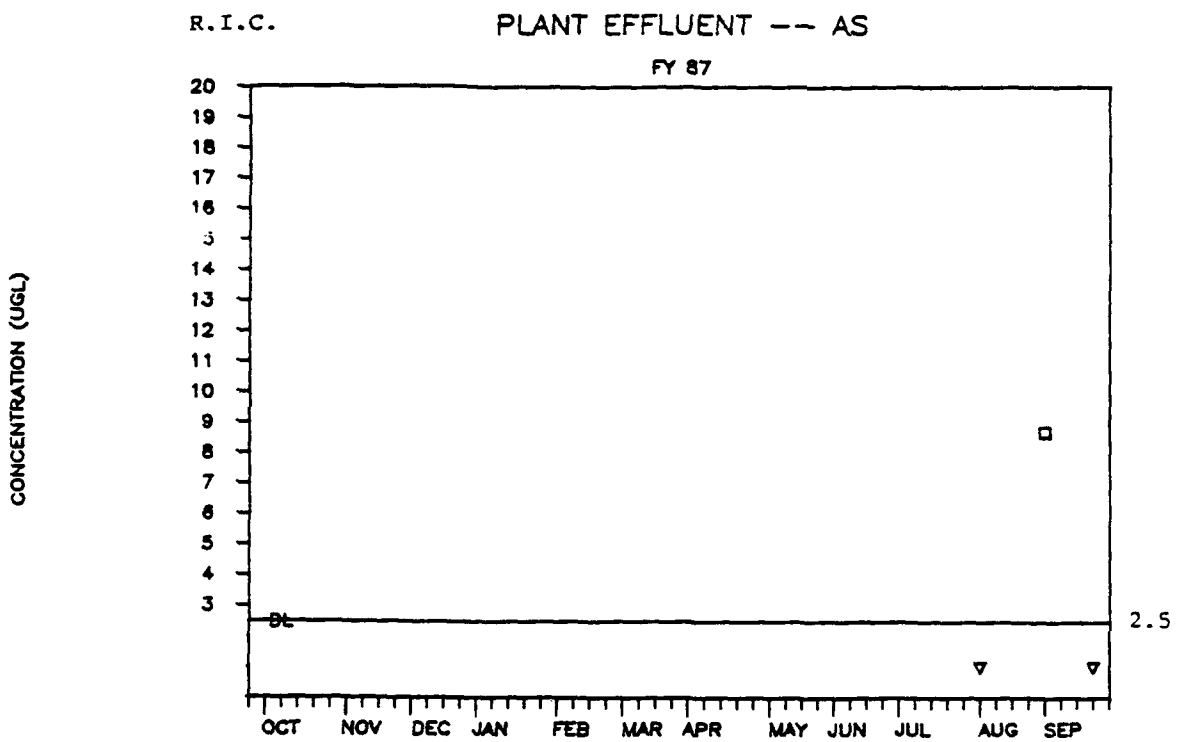
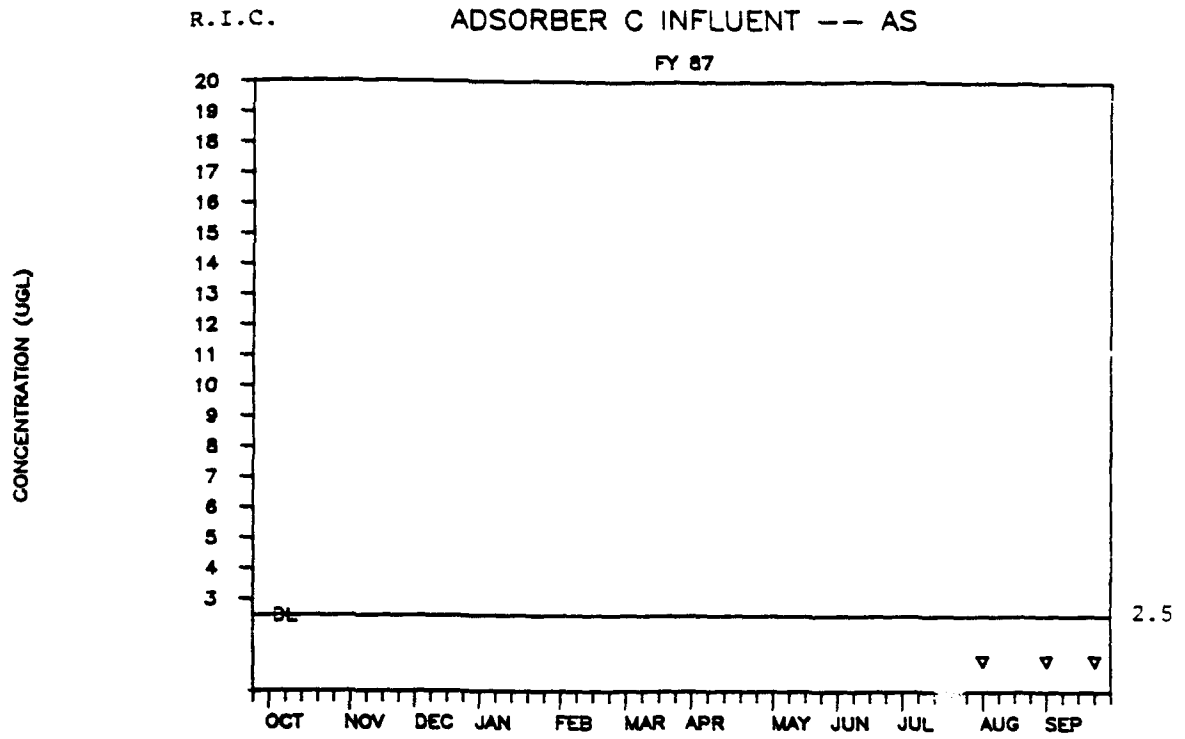


Figure 22. (concluded)

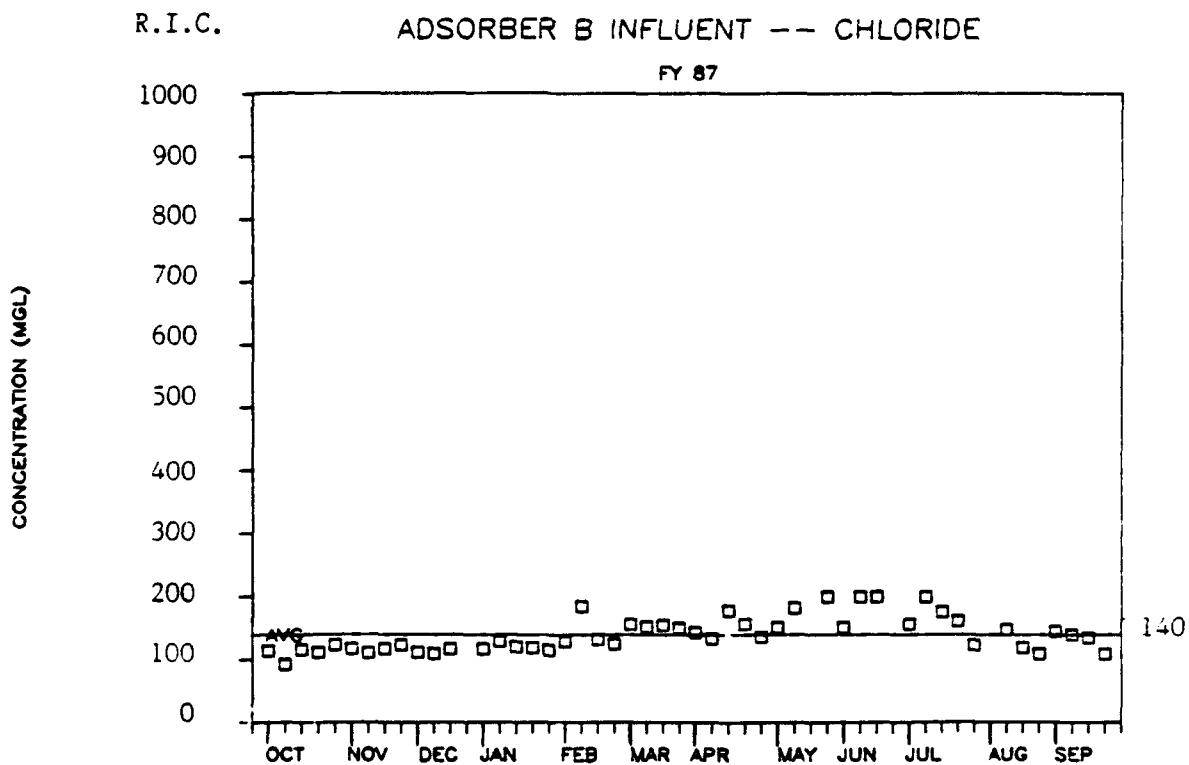
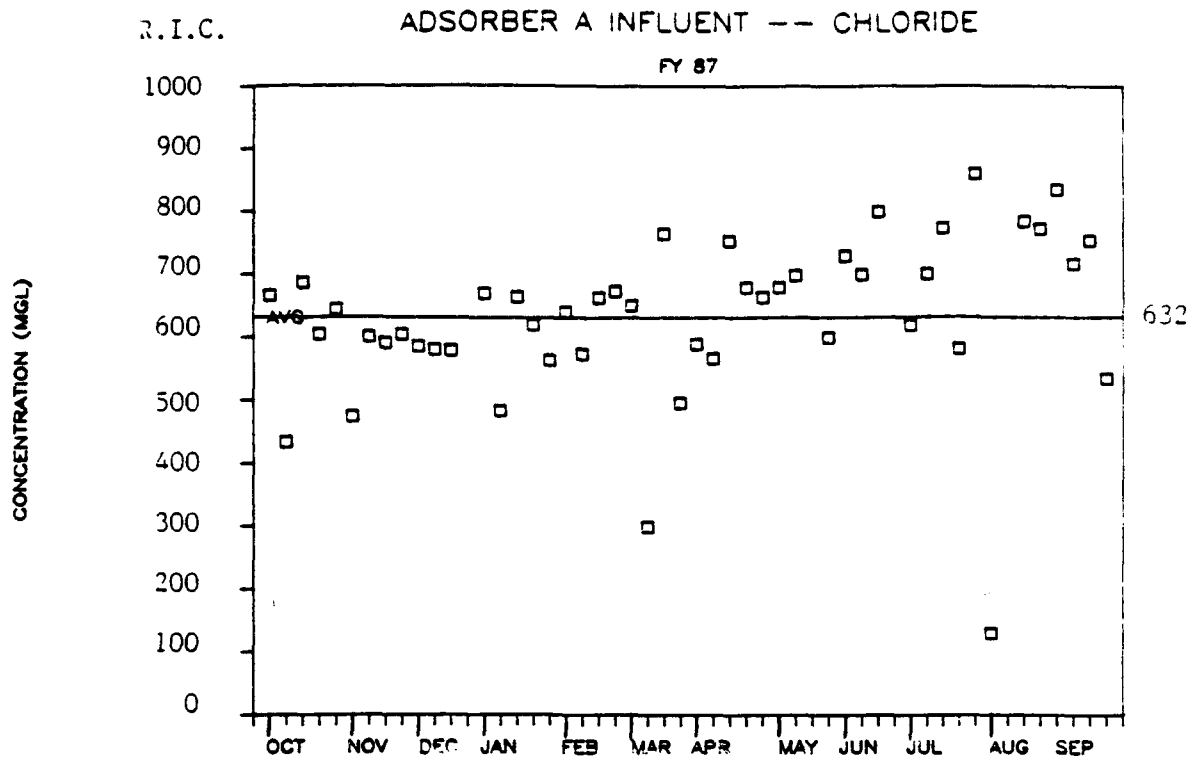
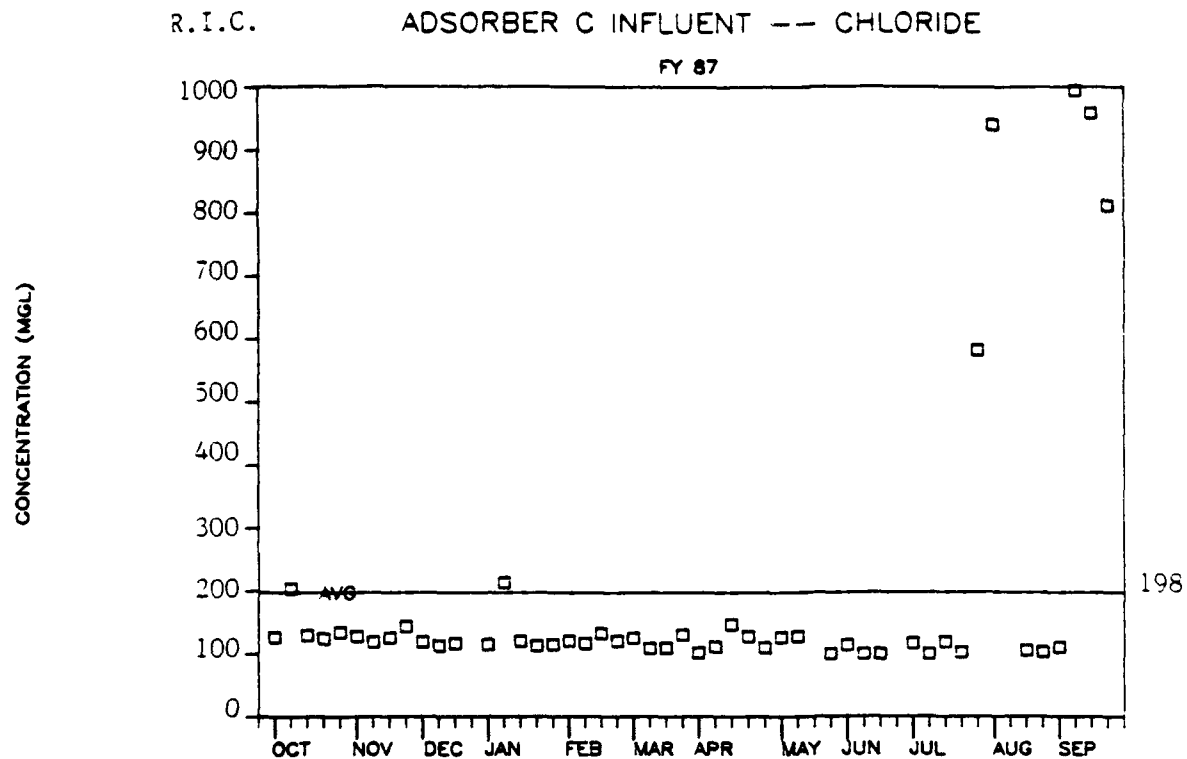


Figure 23. FY87 Chloride (continued)



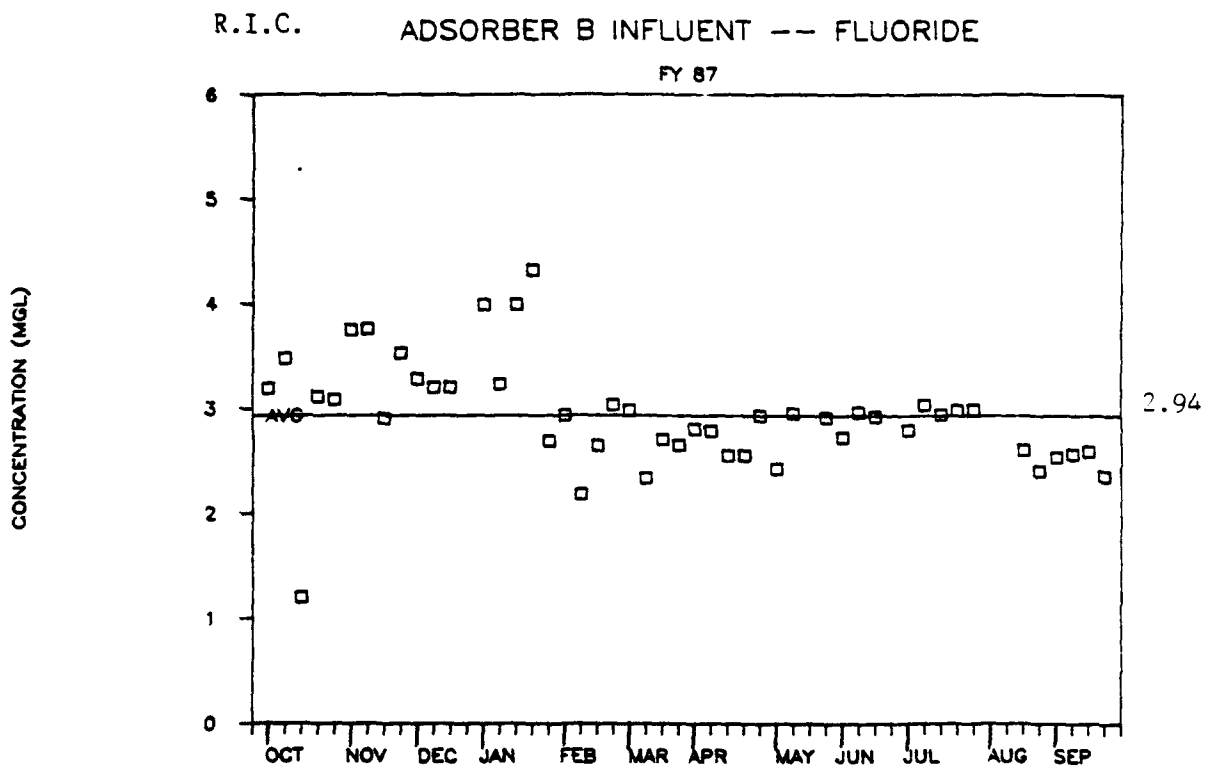
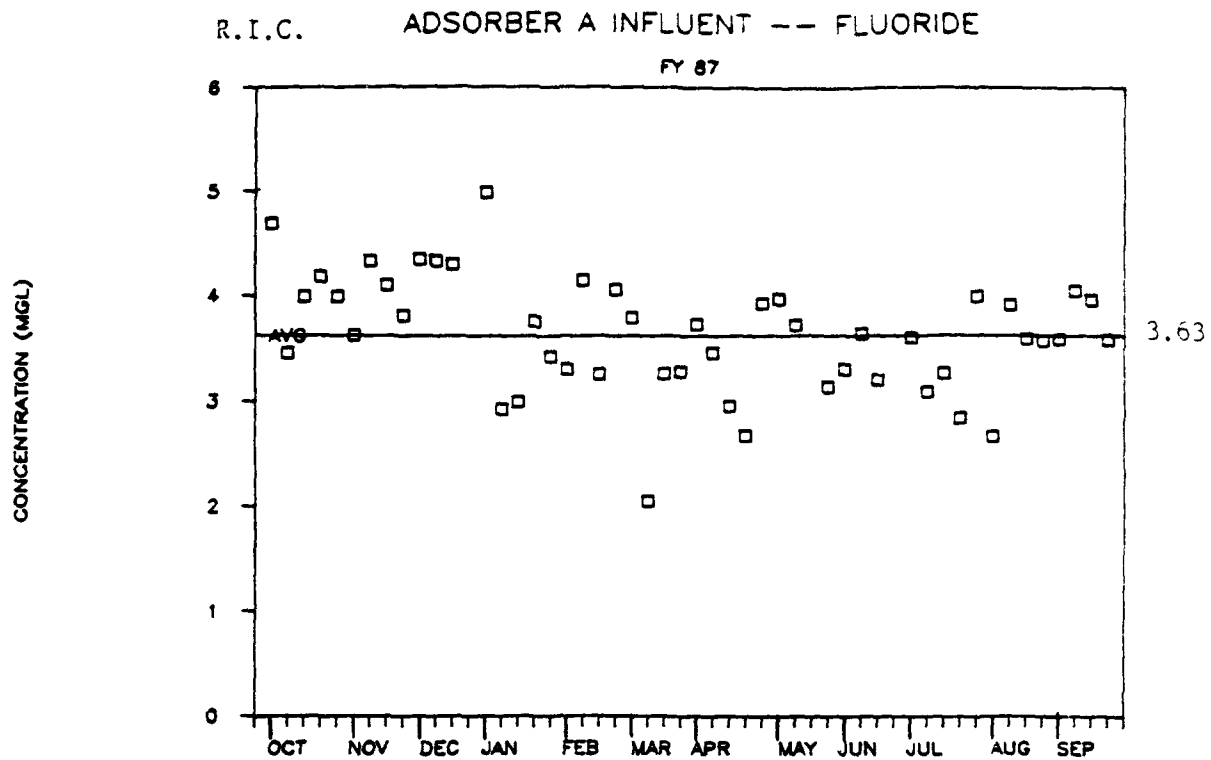


Figure 24. FY87 Fluoride (continued)

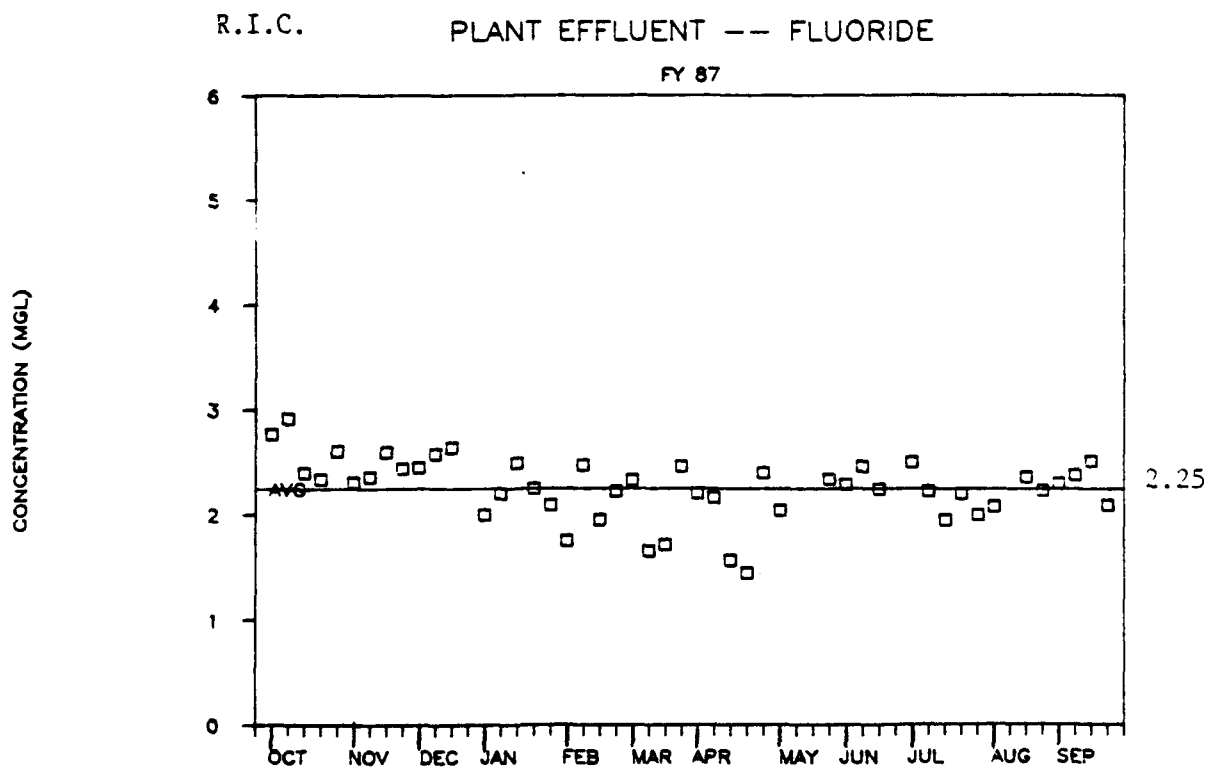
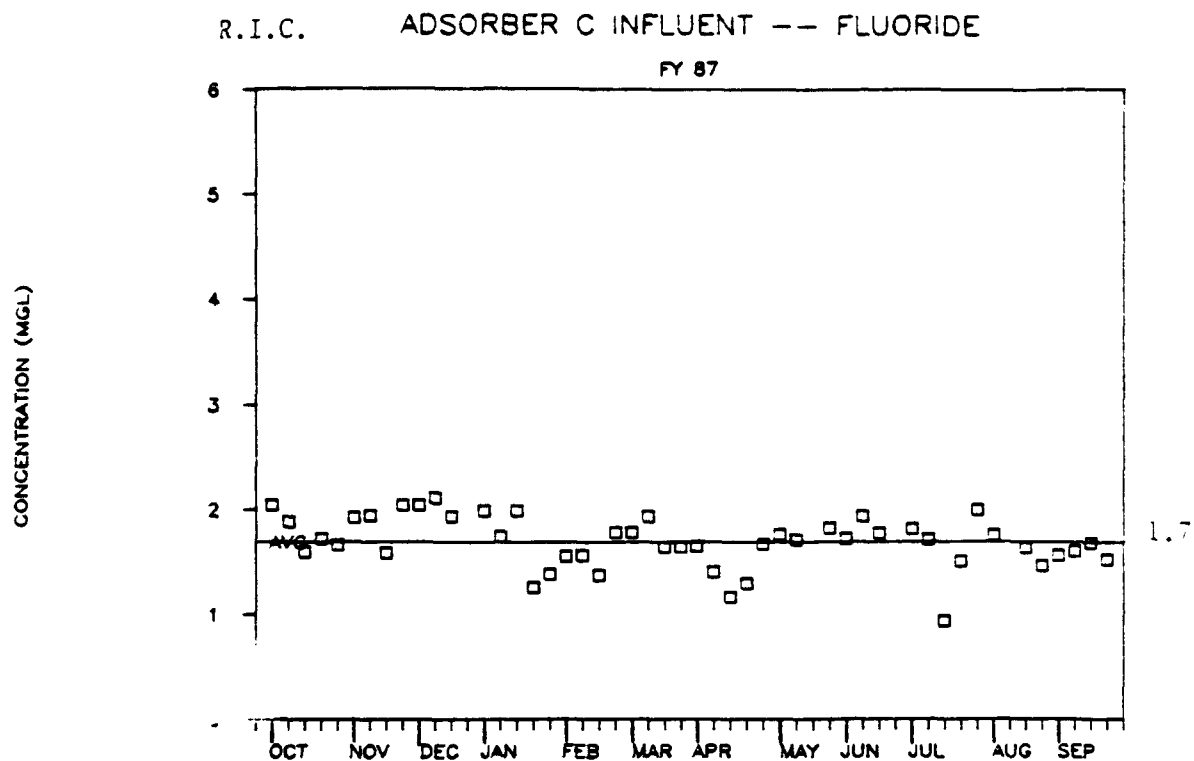


Figure 24. (concluded)

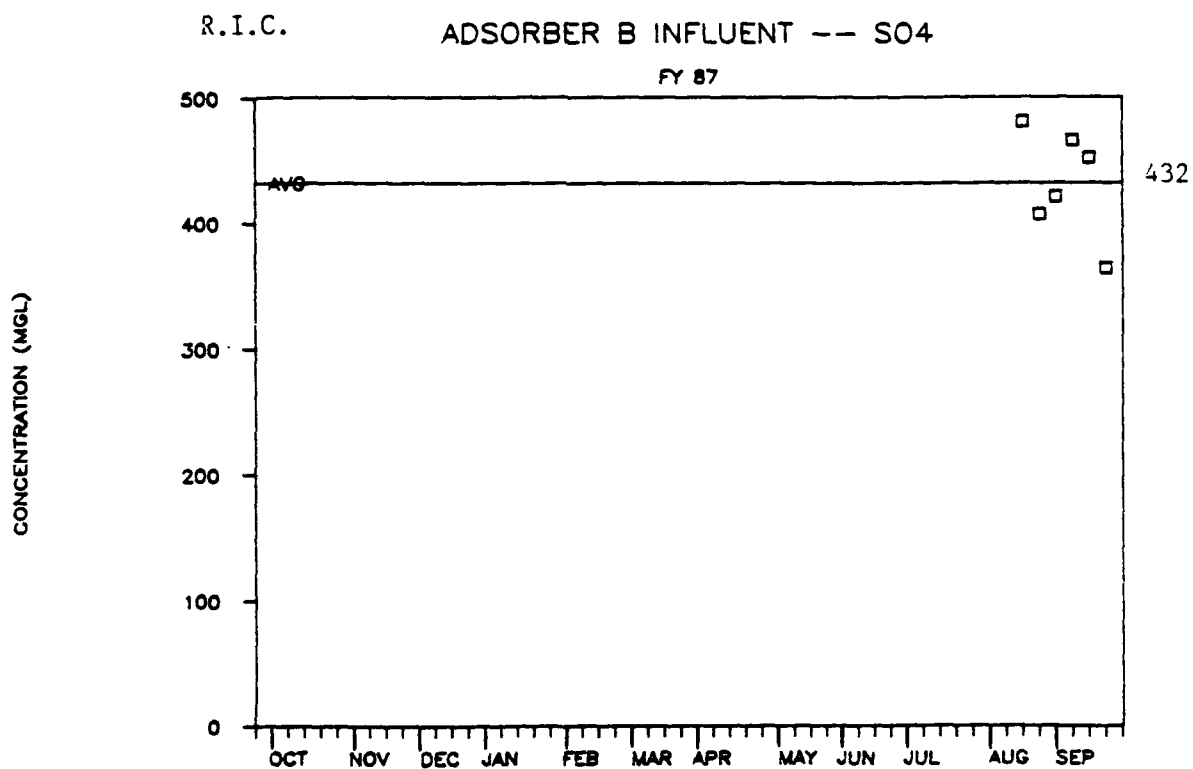
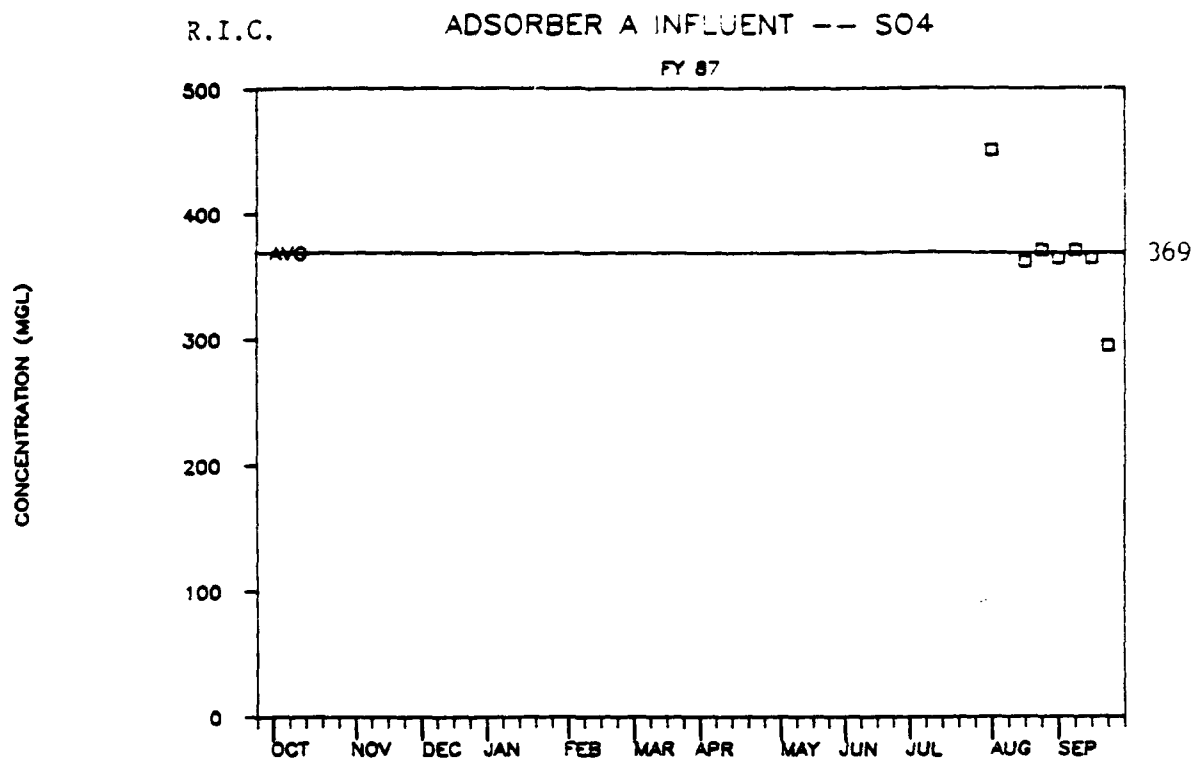


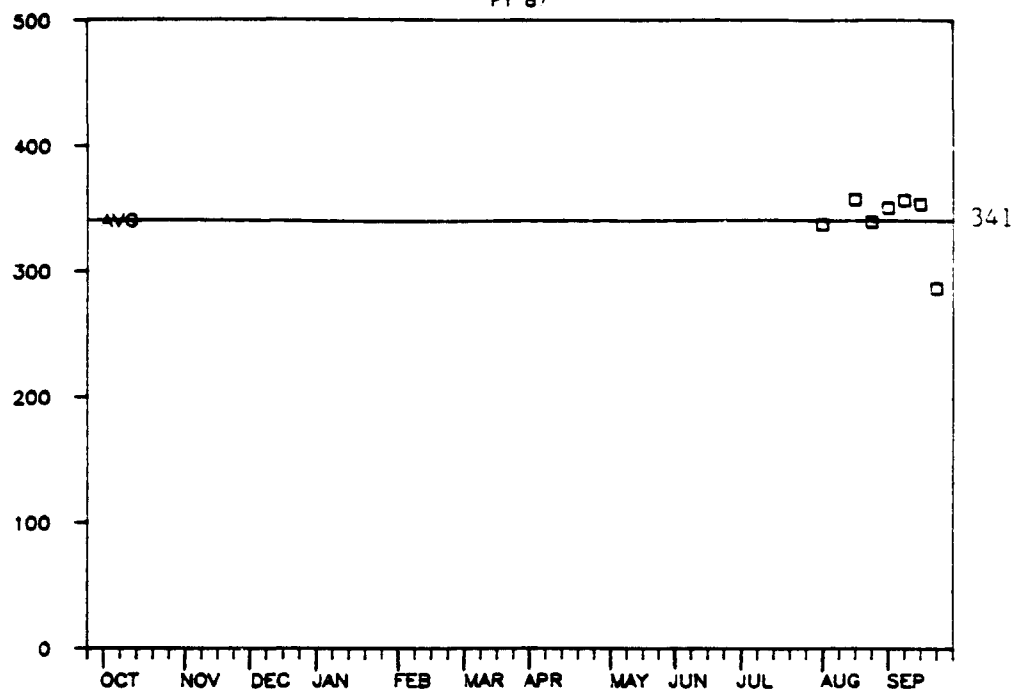
Figure 25. FY87 Sulfate (continued)

R.I.C.

ADSORBER C INFLUENT -- SO4

FY 87

CONCENTRATION (MGL)



R.I.C.

PLANT EFFLUENT -- SO4

FY 87

CONCENTRATION (MGL)

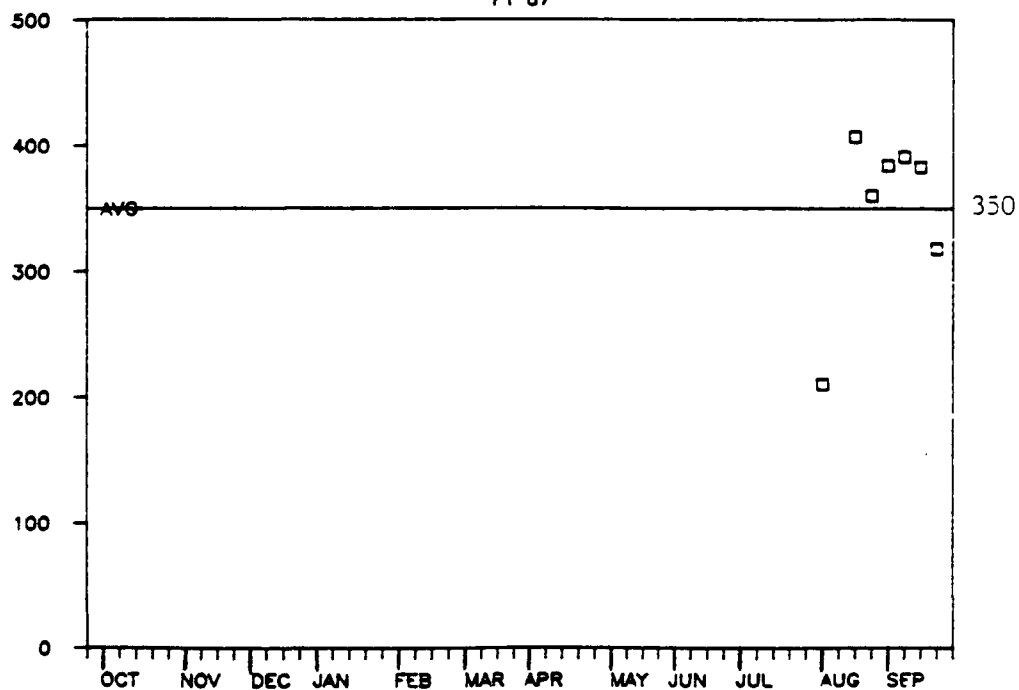


Figure 25. (concluded)

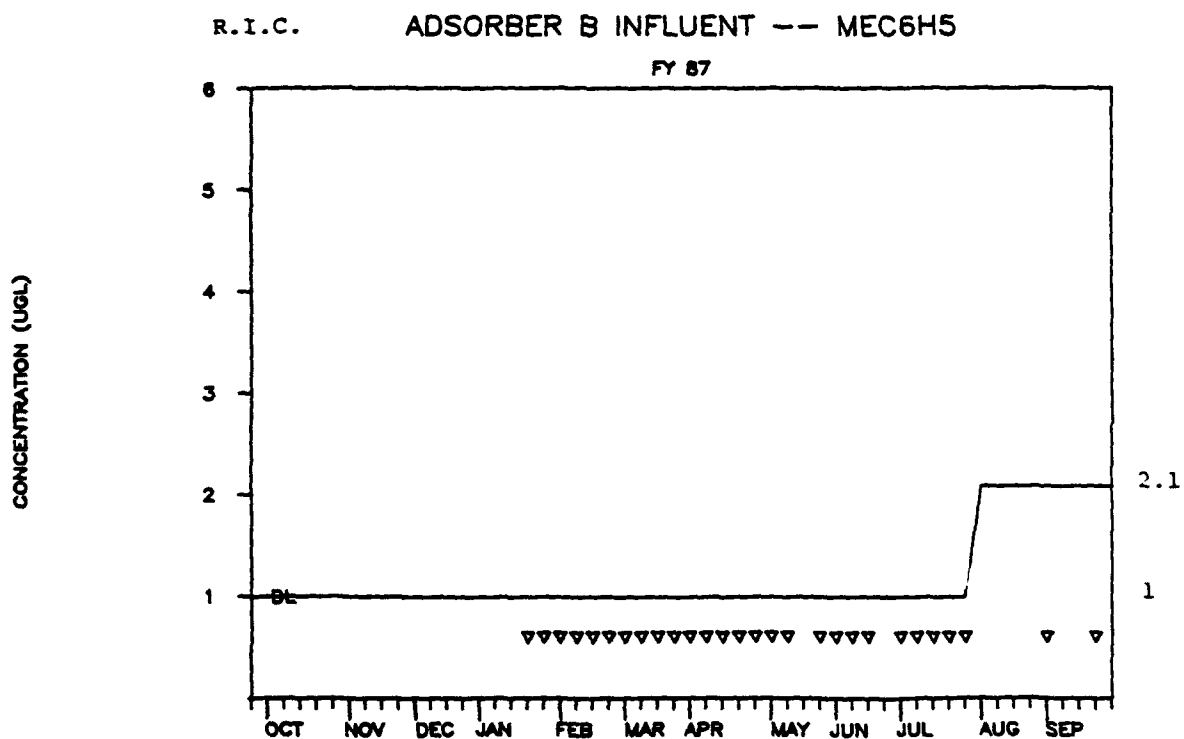
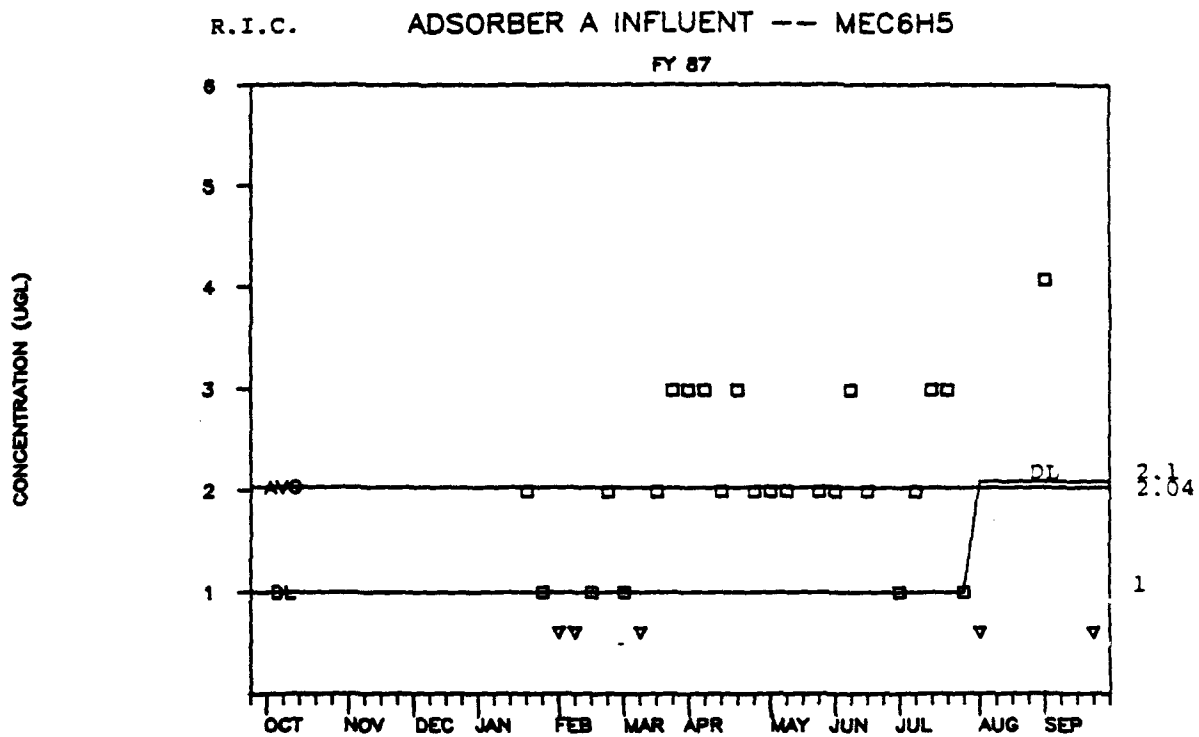


Figure 26. FY87 Toluene (continued)

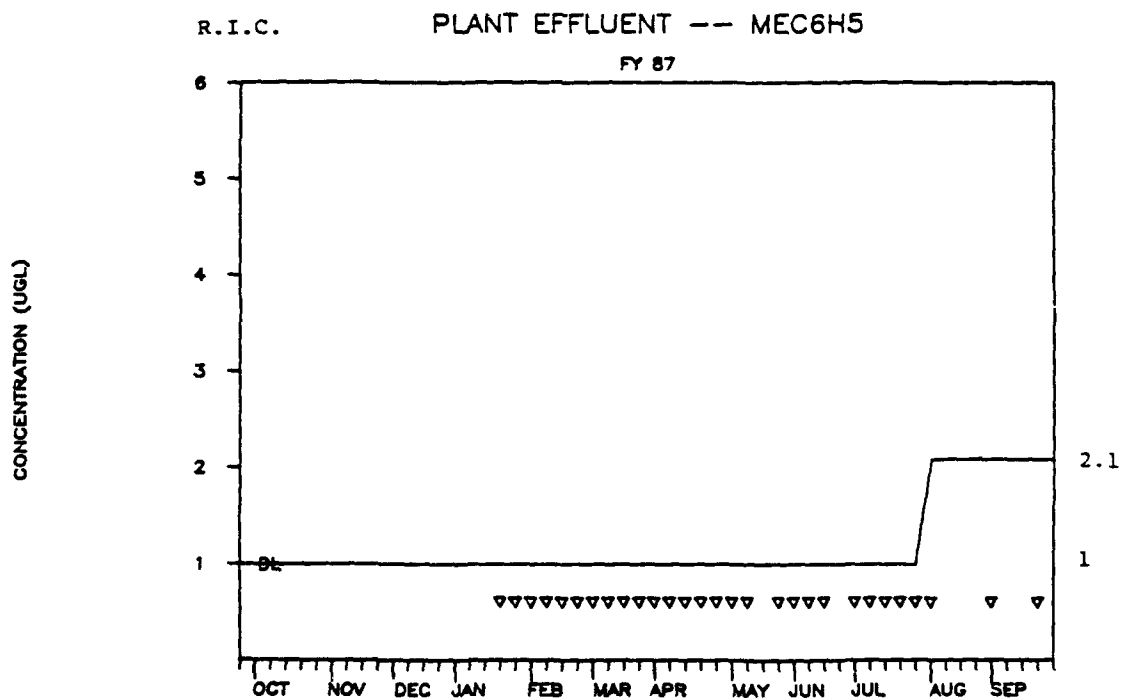
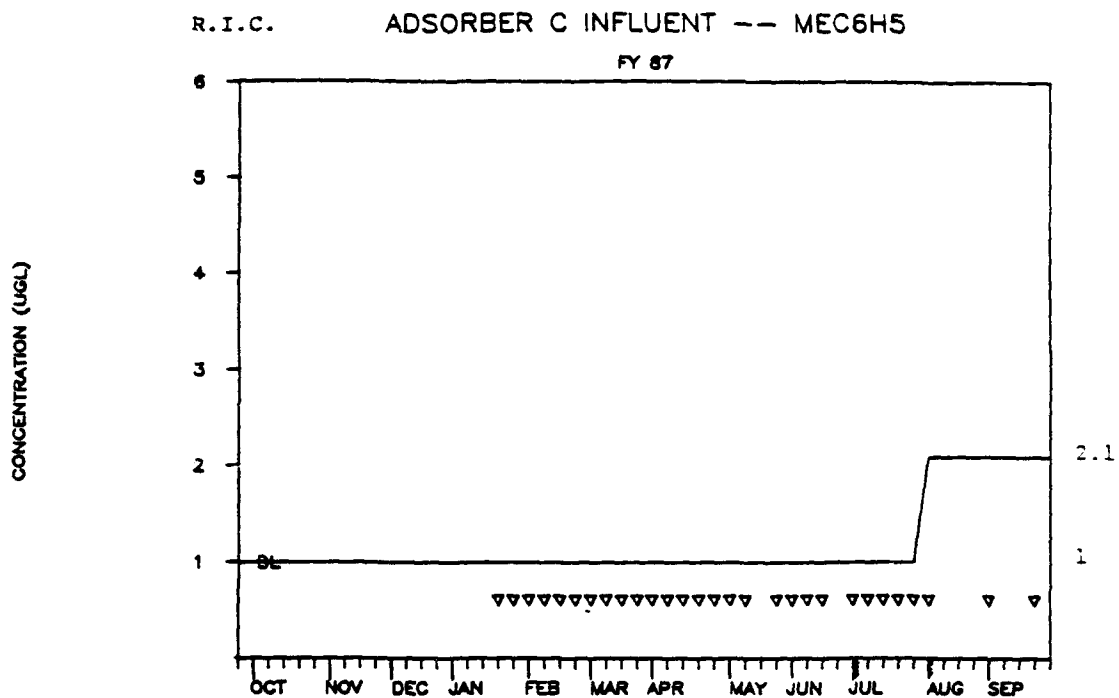


Figure 26. (concluded)

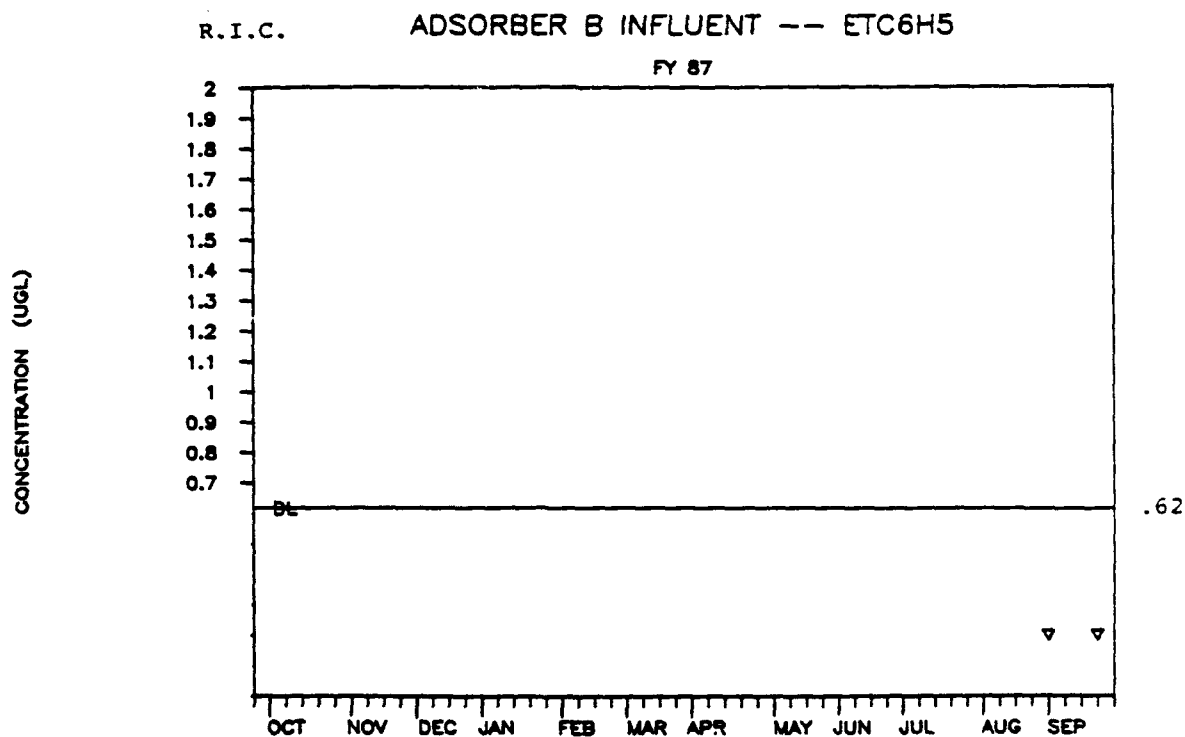
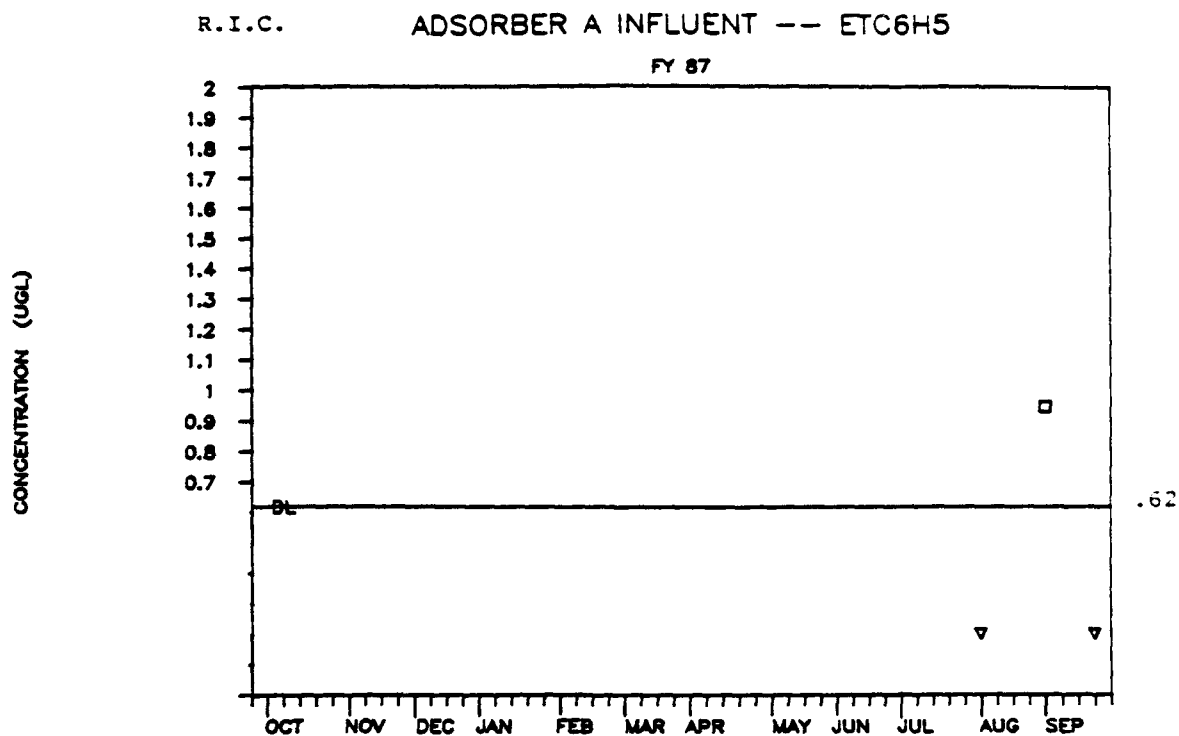


Figure 27. FY87 Ethylbenzene (continued)

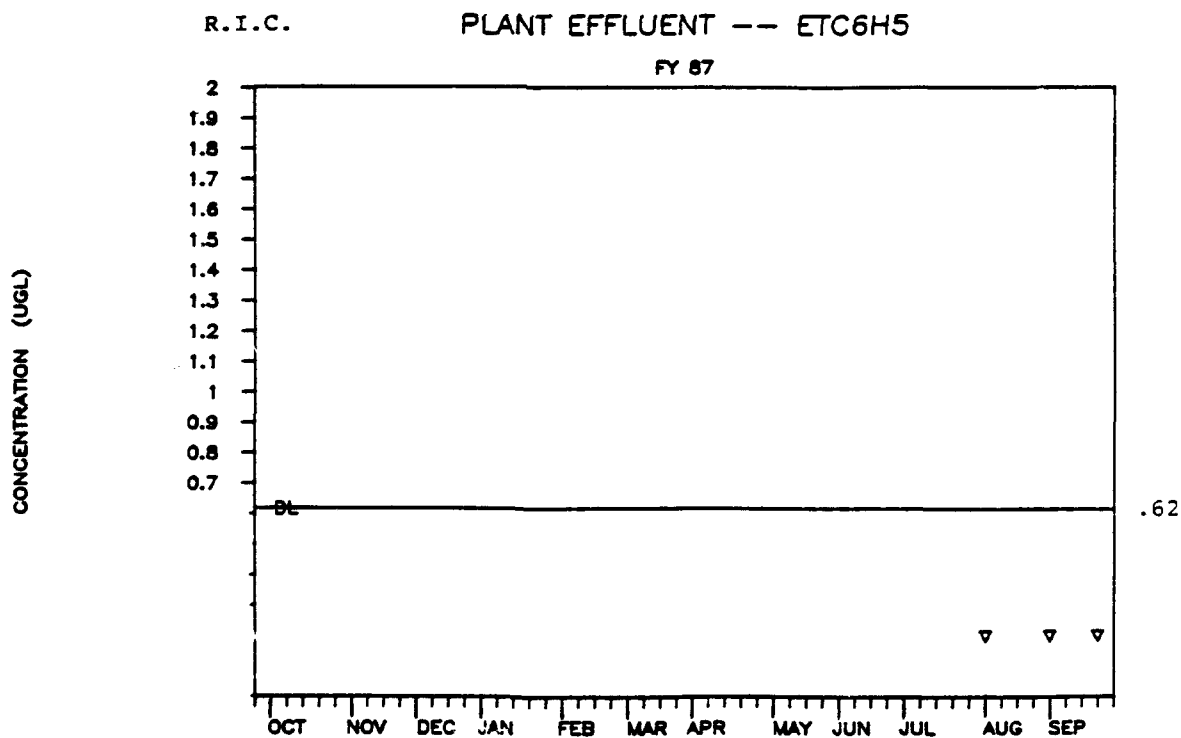
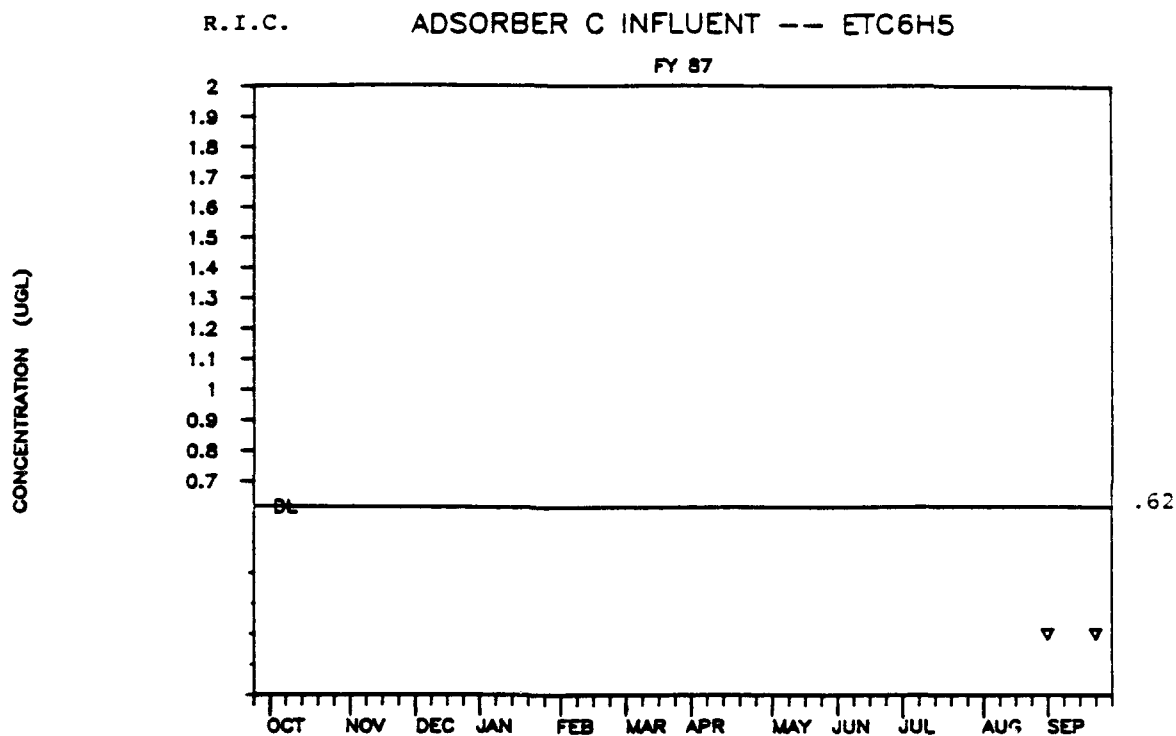


Figure 27. (concluded)

contaminants in groundwater along the three sections of the barrier should not be drawn based on the influent concentration data presented herein.

Endrin

26. The detection level for endrin (Figure 5) in FY87 was 0.2 ppb until the middle of the 4th quarter when it was lowered to 0.016 ppb. The MOL for the NBS treatment plant was 0.2 ppb. Concentrations of endrin ranging from the detection level to approximately 2.7 ppb and 1.8 ppb were found in the influents to adsorber A and adsorber B, respectively, during FY87. No average concentration was calculated for adsorber A while the average found in the influent to adsorber B was 0.54 ppb. No concentrations of endrin above the detection level were found in the influent to adsorber C or in the plant effluent during the year.

Dieldrin

27. The detection level for dieldrin (Figure 6) in FY87 was 0.2 ppb until the middle of the 4th quarter when it was lowered to 0.054 ppb. The MOL for the NBS treatment plant was 0.2 ppb. The concentrations of dieldrin found in the influent to adsorber A ranged from the detection level to 4.5 ppb. The average concentration for FY87 was 1.72 ppb. The highest concentration found in the influent to adsorber B was 2.0 ppb with an average for the year of 0.72 ppb. A few samples of the influent to adsorber C collected in FY87 were found to contain dieldrin with a maximum concentration of 0.4 ppb. No concentrations of dieldrin above the detection level were found in the plant effluent.

Isodrin

28. The detection level for isodrin (Figure 7) in FY87 was 0.2 ppb until the middle of the 4th quarter when it was lowered to 0.056 ppb. The MOL for the NBS treatment plant was 0.2 ppb. A single sample of the influent to adsorber A collected in FY87 was found to contain isodrin above the detection level at 0.35 ppb. No concentrations above the detection level were found in the influent to adsorbers B and C or in the plant effluent.

Hexachlorocyclopentadiene

29. The detection level for hexachlorocyclopentadiene (Figure 8) in FY87 was 0.083 ppb. No MOL was established. Two samples out of a total of six analyzed for hexachlorocyclopentadiene in FY87 from the influent to adsorber A were found to contain concentrations in excess of the detection level. The concentrations in the two samples were 0.48 and 0.58 ppb. No concentrations

above the detection level were found in the influent to adsorbers B and C or in the plant effluent.

P,P'-DDT

30. The detection level for DDT (Figure 9) in FY87 was 0.059 ppb. The MOL for the NBS treatment plant was 0. A single sample of the influent to adsorber A collected in FY87 was found to contain DDT above the detection level at 0.25 ppb. No concentrations above the detection level were found in the influent to adsorbers B and C or in the plant effluent.

Chloroform

31. The detection level for chloroform in FY87 (Figure 10) was 1.0 ppb until the middle of the 4th quarter when it was increased to 1.88. No MOL was established. The concentrations of chloroform found in the influent to adsorber A ranged from the detection level to a high of 100 ppb with an average for the year of 22.0 ppb. The higher concentrations were found during the 1st quarter of FY87. The concentrations found in the influent to adsorber B ranged from the detection level to a high of 80 ppb with an average for the year of 18.0 ppb. With respect to adsorber C, the concentrations ranged from the detection level to 60 ppb. Concentrations of chloroform in excess of the detection level were found in six samples of the plant effluent during the year with the majority of these concentrations found during the 1st quarter. The maximum concentration found was 60 ppb.

Carbon Tetrachloride

32. The detection level for carbon tetrachloride (Figure 11) in FY87 was 1.0 ppb until the middle of the 4th quarter when it was increased to 1.69. No MOL was established. The concentrations of carbon tetrachloride found in the influent to adsorber A ranged from the detection level to a high of 100 ppb. The concentrations found in the influent to adsorber B ranged from the detection level to a high of 20 ppb. No concentrations above the detection level were found in the influent to adsorber C or in the plant effluent.

Trichloroethylene

33. The detection level for trichloroethylene (Figure 12) in FY87 was 1.0 ppb until the middle of the 4th quarter when it increased to 1.3 ppb. No MOL was established. The concentrations of trichloroethylene found in the influent to adsorber A ranged from the detection level to a high of 8 ppb. The higher concentrations were found during the 3rd and 4th quarters of FY87. The concentrations found in the influent to adsorber B ranged from the

detection level to a high of 5 ppb with the higher concentrations also found during the 3rd and 4th quarter. No concentrations above the detection level were found in the influent to adsorber C or in the plant effluent.

Tetrachloroethylene

34. The detection level for tetrachloroethylene (Figure 13) in FY87 was 1.0 ppb until the middle of the 4th quarter when it was increased to 2.8 ppb. No MOL was established. The concentrations of tetrachloroethylene found in the influent to adsorber A ranged from the detection level to a high of 70 ppb with an average for the year of 37.0 ppb. The concentrations found in the influent to adsorber B ranged from the detection level to a high of 20 ppb with an average for the year of 17.0 ppb. A single sample of the influent to adsorber C collected in FY87 was found to contain tetrachloroethylene above the detection level at approximately 29 ppb. No concentrations above the detection level were found in the plant effluent.

1,2 Dichloroethane

35. The detection level for 1,2 dichloroethane (Figure 14) in FY87 was 1.0 ppb. No MOL was established. Five samples out of a total of nineteen analyzed for 1,2 dichloroethane in FY87 from the influent to adsorber A were found to contain concentrations in excess of the detection level. The highest concentration found in these samples was 7.0 ppb. No concentrations above the detection level were found in the influent to adsorbers B and C or in the plant effluent.

1,2 Dichloroethylene

36. The detection level for 1,2 dichloroethylene (Figure 15) in FY87 were 1.0 ppb until the middle of the 4th quarter when it was increased to 2.07 ppb. No MOL was established. The concentrations of 1,2 dichloroethylene found in the influent to adsorber A ranged from the detection level to a high of 60 ppb. The concentrations found in the influent to adsorber B ranged from the detection level to a high of 30 ppb. The higher concentrations were found during the 1st and 2nd quarters of FY87. Four samples of the influent to adsorber C were found to contain 1,2 dichloroethylene above the detection level with the highest concentration found being 50 ppb. Three samples of the plant effluent were found to contain concentrations above the detection level with the highest found being 10 ppb. The four samples associated with the influent to adsorber C and the three associated with the plant effluent were collected during the 1st and 2nd quarters of FY87.

Combined Organo-Sulfurs

37. The detection level for the combined organo-sulfurs in (Figure 16) FY87 was 60 ppb until the middle of the 4th quarter when it was lowered to 5.3 ppb. The MOL for the NBS treatment plant was 100 ppb. The total concentrations of the combined organo-sulfurs found in the influent to adsorbers A ranged from the detection level to 85 ppb. Six influent samples from adsorber B were found to contain concentrations above the detection level with the highest value found to be 70 ppb. The six samples were collected during the 2nd and 3rd quarters of FY87. Three samples of the influent to adsorber C were found to contain concentrations at or slightly above the detection level of 5.3 ppb. No concentrations above the detection level were found in the plant effluent.

Dithiane

38. The detection level for dithiane (Figure 17) in FY87 was 20 ppb until the middle of the 4th quarter when it was lowered to 3.34 ppb. No MOL was established. Four samples of the influent to adsorber A were found to contain dithiane at or above the detection level with the highest concentration found to be 25 ppb. No concentrations above the detection level were found in the influent to adsorbers B and C or in the plant effluent.

Benzothiazole

39. The detection level for benzothiazole (Figure 18) in FY87 was 1.1 ppb. No MOL was established. One adsorber A influent sample out of the three analyzed for benzothiazole in FY87 was found to contain a concentration of 1.3 ppb that was in excess of the detection level. No concentrations above the detection level were found in the influent to adsorbers B and C or in the plant effluent.

DCPD

40. The detection level for DCPD (Figure 19) was 1 ppb until the middle of the 4th quarter when it was increased to 9.31 ppb. The MOL for the NBS treatment plant was 24 ppb. The concentrations of DCPD found in the influent to adsorber A ranged from the detection level to 500 ppb with an average for the year of 200 ppb. The concentrations found in the influent to adsorber B ranged from the detection level to 30 ppb with an average for the year of 24 ppb. Several samples of the influent to adsorber B and the plant effluent were found to contain concentrations of DCPD at or slightly above the detection level.

DIMP

41. The detection level for DIMP (Figure 20) in FY87 was 10 ppb. The MOL for the NBS treatment plant was 500 ppb. The concentrations of DIMP found in the influent to adsorber A ranged from the detection level to 1350 ppb with an average for the year of 645 ppb. The concentrations found in the influent to adsorber B ranged from the detection level to 175 ppb with an average for the year of 88.8 ppb. Two samples of the influent to adsorber C and one sample of the plant effluent were found to contain concentrations of DIMP at or slightly above the detection level.

DBCP

42. The detection level for DBCP (Figure 21) in FY87 was 0.2 ppb until the middle of the 4th quarter when it was lowered to 0.13 ppb. The MOL for the NBS treatment plant was 0.2 ppb. The concentrations of DBCP found in the influent to adsorber A ranged from the detection level to approximately 1.75 ppb with an average for the year of 0.76 ppb. Concentrations in the influent were found to range from the detection level to approximately 2.3 ppb with an average for the year of 0.96 ppb. The concentrations found in the influent to adsorber C ranged from the detection level to approximately 0.5 ppb. No concentrations of DBCP above the detection level were found in the plant effluent.

Arsenic

43. The detection level for arsenic (Figure 22) in FY87 was 2.5 ppb. No MOL was established. One sample out of a total of three analyzed for arsenic in FY87 from the influent to adsorber A was found to contain a concentration in excess of the detection level at 5.09 ppb. No concentrations above the detection level were found in the influent to adsorbers B and C. One sample from the plant effluent was found to contain a concentration in excess of the detection level at approximately 8.71 ppb. It should be noted that arsenic is not treated by the activated carbon treatment system.

Chloride

44. The detection level for chloride (Figure 23) was not reported. The concentrations of chloride found in the influent to adsorber A ranged from 100 ppm to 870 ppm with an average for the year of 632 ppm. The concentrations found in the influent to adsorber B ranged from 90 ppm to 200 ppm with an average for the year of 140 ppm. For adsorber C, the concentrations found in the influent ranged from 100 ppm to 1000 ppm with an average for the year

of 198 ppm. The higher concentrations were found in samples collected during the 4th quarter of FY87. The concentrations of chloride found in the plant effluent ranged from approximately 100 ppm to 521 ppm with an average for the year of 211 ppm. Like arsenic, chloride is not removed from the ground water by the activated carbon treatment system.

Fluoride

45. The detection level for fluoride (Figure 24) was not reported. The concentrations of fluoride found in the influent to adsorber A ranged from 2 ppm to 5 ppm with an average for the year of 3.63 ppm. The concentrations found in the influent to adsorber B ranged from 1.2 ppm to 4.3 ppm with an average for the year of 2.94 ppm. The concentrations found in the influent to adsorber C ranged from 1 ppm to 2.1 ppm with an average for the year of 1.7 ppm. The concentrations found in the plant effluent ranged from 1.4 ppm to 2.9 ppm with an average for the year of 2.25 ppm. Fluoride is not removed from the ground water by the activated carbon treatment system.

Sulfate

46. The detection level for sulfate (Figure 25) was not reported. No MOL was established. The concentrations of sulfate found in the influents to the three adsorbers and in the plant effluent generally ranged from 300 ppm to 480 ppm. The average concentrations (all samples were taken during the 4th quarter) for adsorbers A, B, and C and the plant effluent were 369 ppm, 432 ppm, 341 ppm, and 350 ppm, respectively. Sulfate is not removed from the ground water by the activated carbon treatment system.

Toluene

47. The detection level for toluene (Figure 26) was 1 ppb until the middle of the 4th quarter when it was increased to 2.1 ppb. No MOL was established. The concentrations of toluene found in the influent to adsorber A ranged from the detection level to 4.0 ppb with an average for the year of 2.04 ppb. No concentrations above the detection level were found in the influent to adsorbers B and C or in the plant effluent.

Ethylbenzene

48. The detection level for ethylbenzene (Figure 27) was 0.62 ppb. No MOL was established. One sample out of a total of three analyzed for ethylbenzene in FY87 from the influent to adsorber A was found to contain a concentration in excess of the detection level at 0.95 ppb. No concentrations

above the detection level were found in the influent to adsorbers B and C or in the plant effluent.

Carbon Usage

49. A summary of the data on carbon usage in the NBS treatment plant for FY87 is presented in Table 5. Approximately 177,000 pounds of activated carbon were used in FY87 with 75 percent of the total usage in adsorber A. Carbon usage rates for FY87 in adsorber A were over three times higher than FY86, approximately the same for adsorber B, and a little less than half the FY86 usage rate for adsorber C. The total carbon usage rate increased from 0.90 lb/1000 gals in FY86 to 1.35 lbs/1000 gals in FY87.

Table 5
FY87 Carbon Usage in the NB Treatment Plant

Adsorber	Carbon Used per Qtr				Year (lbs)	Annual Usage Rate (lbs/1,000 gal)
	1st (lbs)	2nd (lbs)	3rd (lbs)	4th (lbs)		
A	39,318	42,148	27,645	24,631	133,742	5.25
B	10,680	4,730	10,014	7,601	33,025	0.73
C	<u>376</u>	<u>784</u>	<u>2,970</u>	<u>6,191</u>	<u>10,321</u>	<u>0.17</u>
Total	50,374	47,662	40,629	38,423	177,088	1.35

PART IV: DATA EVALUATIONS

Geology and Hydrogeology

50. General setting. The geology and hydrogeology of the North Boundary have been described previously by Thompson et al. (1985), PMSO (1987), and ESE (1988). The two geologic units of concern along the North Boundary are the recent alluvium and the underlying Denver formation. The alluvium is composed of clays, silts, sands and gravels with sands and gravels most common in the lower alluvium and finer soils in the upper alluvium. The alluvium is approximately 20 to 30 ft thick in the vicinity of the containment system. The alluvium has an approximate 10 to 20 ft saturated thickness at the North Boundary at a depth of 5 to 15 ft below ground surface. Saturated thicknesses as great as 25 ft occur in the valley fill upgradient of the boundary. The Denver formation which underlies the alluvium is composed mainly of clay shale and claystone interbedded with some fine to medium grained sand units. Within the Denver formation there are local saturated sand units with artesian conditions.

51. Hydrogeology of the alluvial aquifer. In the vicinity of the containment system, the ground water flow is northward between two Denver formation highs. The ground water flux in the alluvial aquifer at the North Boundary was originally estimated at 640,000 gallons per day (444 gpm). Later flow measurements and water level data indicated flows in the range of 250 to 325 gpm (Thompson et al., 1985). PMSO, 1987, estimated flow to be 200 to 250 gpm. Normally, permeability of the coarse grained alluvium is three orders of magnitude larger than that of the Denver sands.

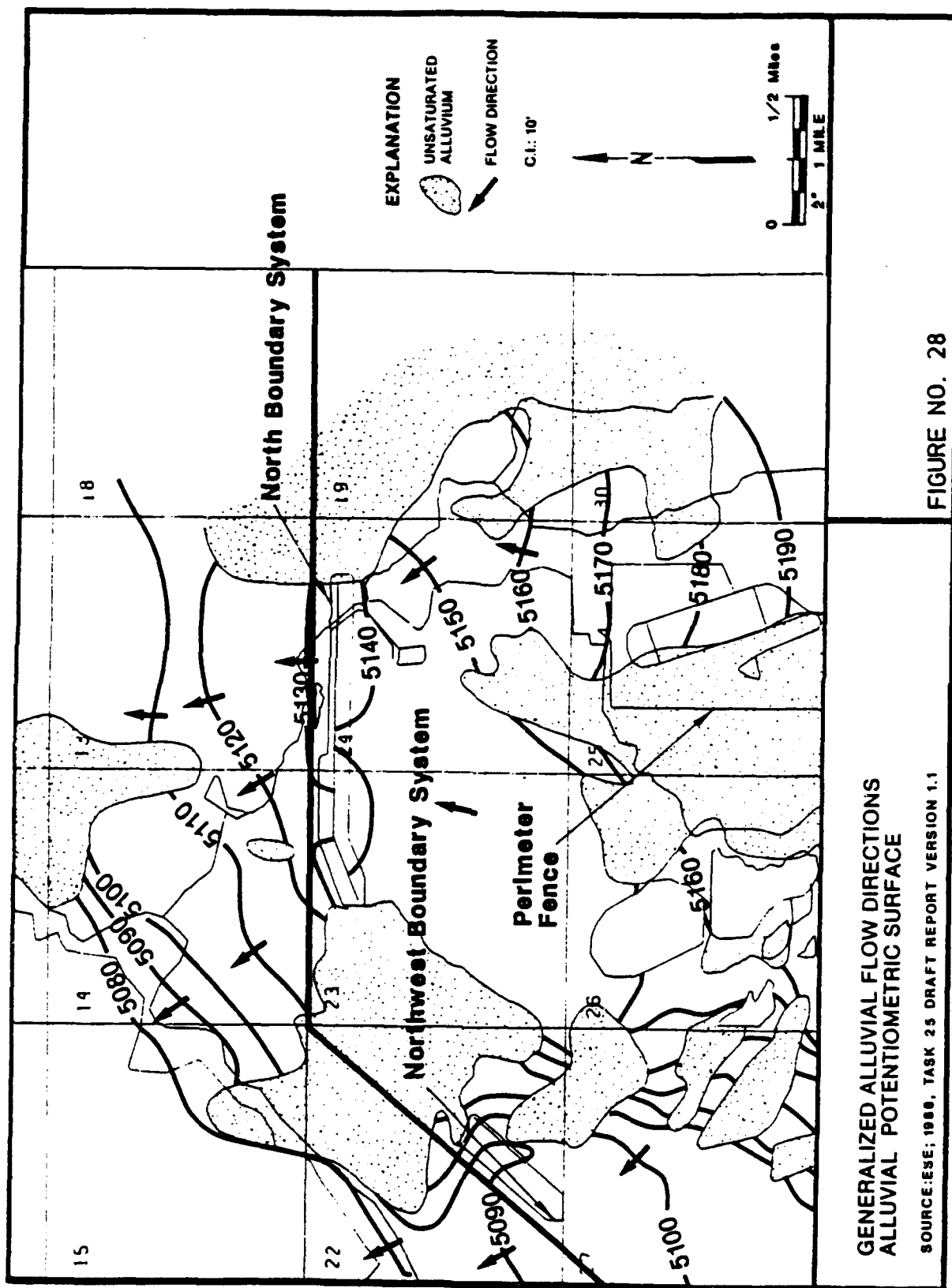
52. The flow of alluvial ground water is influenced by the paleodrainage surface on the underlying Denver formation. A contour map of the Denver surface was presented in Thompson et al. (1985) and was reproduced in PMSO (1987). A significant paleodrainage feature defined by contours on the map is an apparent broad, buried stream valley that enters the North Boundary area from the southwest corner and crosses the barrier about 500 feet east of the "D" Street intersection. The slurry wall was constructed across the buried valley which has a maximum width of 4000 ft in Section 23 and is defined by paralleling Denver highs on each side. A large portion of the valley surface is relatively flat and slopes in elevation from about 5148 ft MSL in the

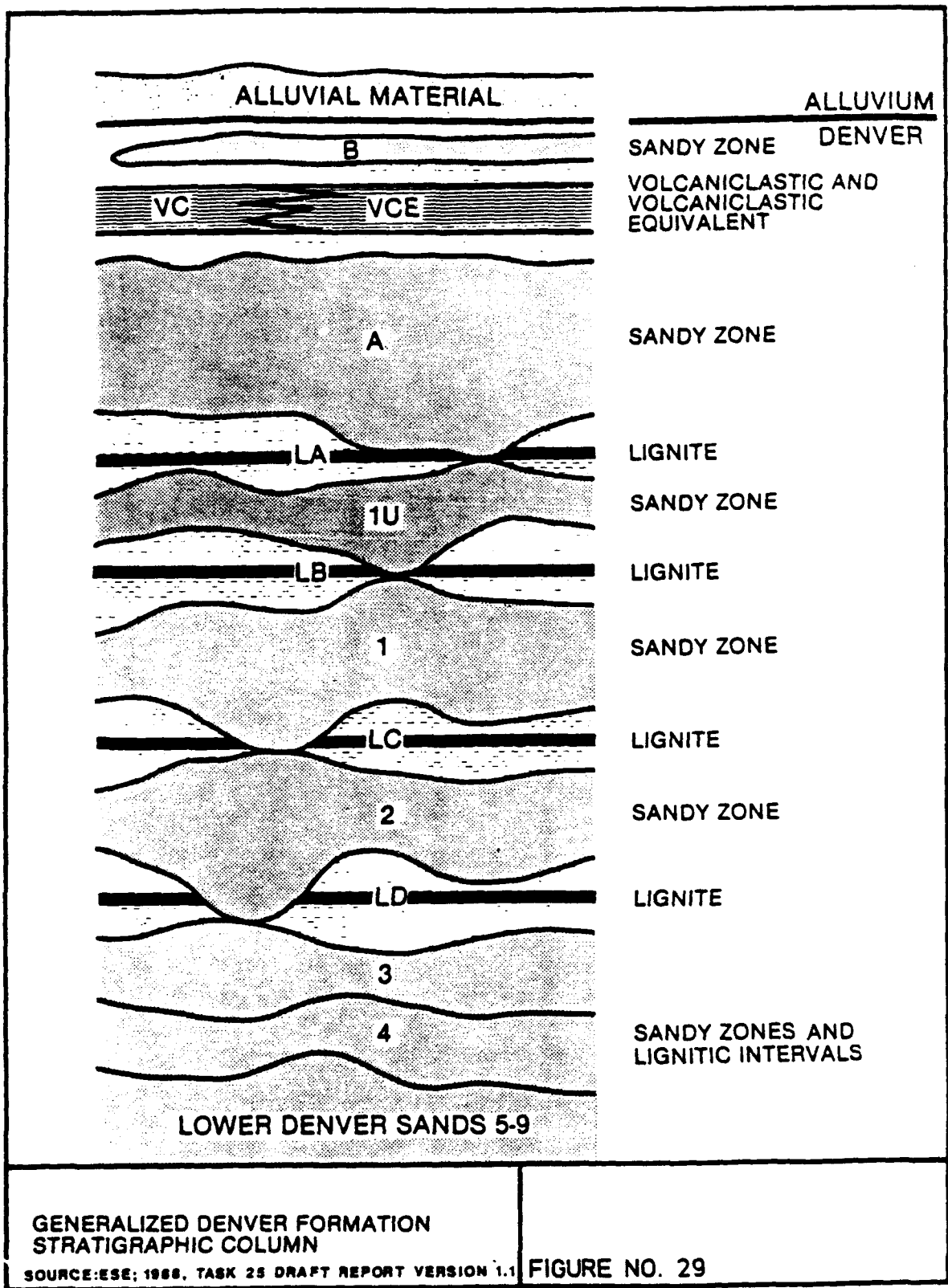
northern portion of Section 26 to 5130 feet MSL near the north boundary. A deeper channel, incised approximately 15 feet lower in the Denver than the average valley floor, extends from the northern area of Section 26 to the east end of the Pilot barrier wall. The deeper channel is narrow near its origination in Section 26, gradually widens toward the north, and intercepts paleodrainage from the North and First Creek areas at points near the east end of the barrier wall.

53. In effect all alluvial ground water, from the northern portion of Section 26 to east of First Creek, is funneled through the old stream valley across the north boundary of RMA where the barrier was constructed, Figure 28. Although alluviation and subsequent erosional processes have largely obscured the present surface expression of the buried river valley, the surface drainage is similar in flow direction to underlying paleodrainage. The direction of flow of the alluvial ground water, defined by the ground water contours in Plates 1 through 4, generally parallels the buried stream valley between the Denver formation highs. Water collecting in the alluvium overlying the highs drains at locally high gradients down into the thick alluvium of the buried valley (see Plates 1 through 4). The water table is relatively flat within and across the valley and alluvial ground water flows at relatively low gradients toward the barrier.

54. Alluvial deposits that have filled the buried valley consist largely of silts, sands and gravels. Ground water flows readily through the coarse grained alluvium and provides the primary conduit for ground water contaminants which migrate from the northern portion of Section 26 to the north boundary of RMA. Most of the major chemical plumes are contained within the buried valley limits.

55. Hydrogeology of the Denver formation. The hydrogeology of the Denver formation was discussed in ESE (1988) and is summarized below. The Denver formation geology is a complex system of interbedded sandstones and siltstones contained in a matrix of fine-grained claystones and siltstones. The cross-sectional view of the Denver formation sediments, Plates 5 and 6, shows lenticular sandstone bodies encased in siltstones and claystones. These sandstone bodies have been assigned to generalized hydrostratigraphic zones based upon lithology and depth in the aquifer. In some portions of the study area, these zones are separated by up to 30 ft of clayshale, while in other areas some of the hydrostratigraphic zones appear to be in contact and act as one unit. Figure 29 is a stratigraphic column of the Denver formation in the





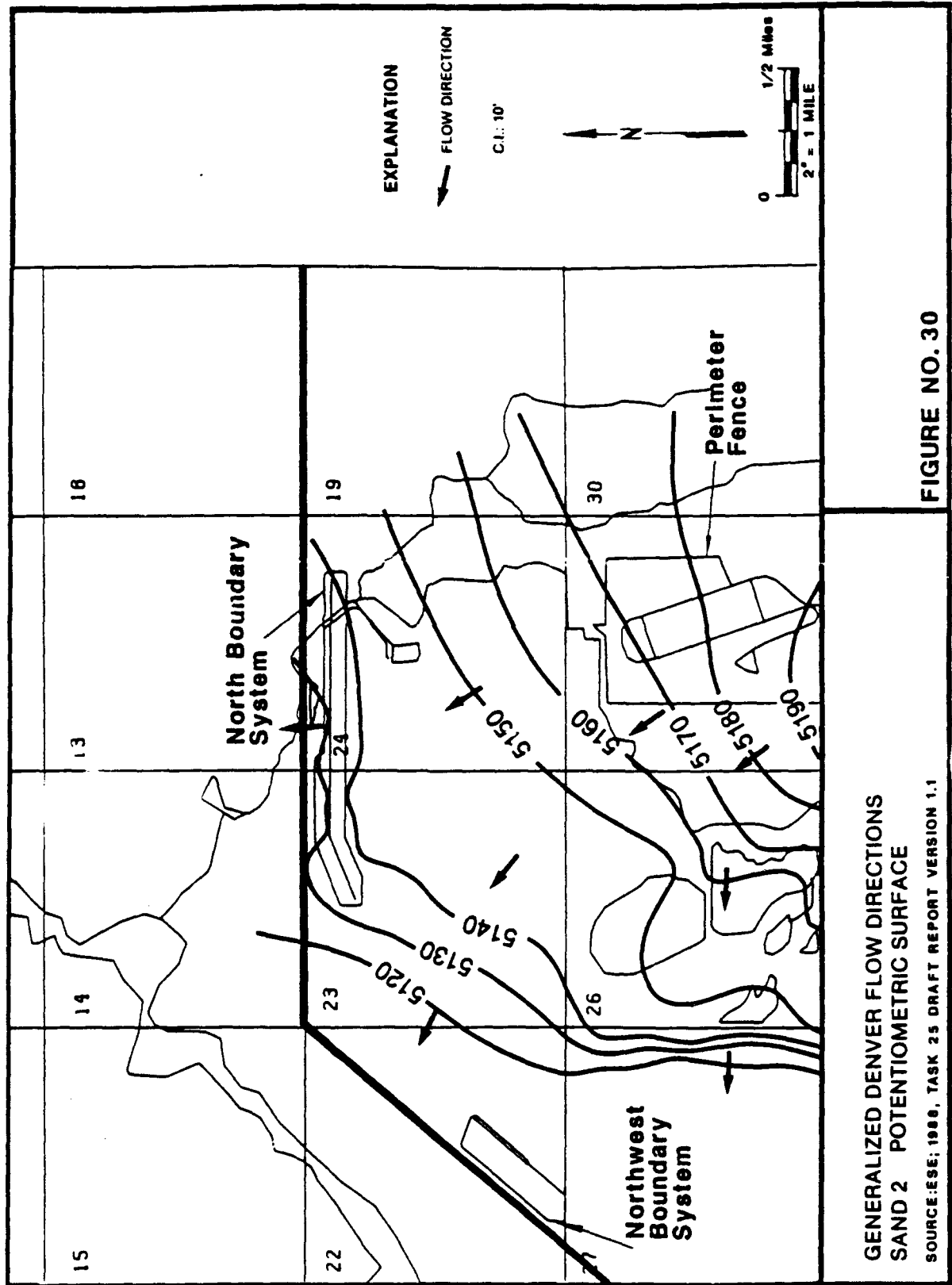
vicinity of the North Boundary system. The sandstone units exhibit the highest permeability (K) values within each zone and therefore represent the most likely avenues of contaminant transport within the Denver formation.

56. Stratigraphic correlation of individual sandstone units for long distances across RMA is complicated by the nondeposition and/or erosional truncation of individual units. The geologic cross-section shown in Plates 5 and 6 illustrates the general stratigraphy of the Denver formation near the North Boundary containment system. The Denver formation at RMA has regional strike from southwest to northeast and an average regional dip of less than one degree. Flow in the Denver formation hydrostratigraphic zones in the vicinity of the North Boundary system is generally to the north and northwest (updip) Figure 30. Calculated horizontal hydraulic gradients in Denver formation sandstones vary between 0.003 and 0.01 ft/ft.

57. The direction of vertical ground water flow is generally downward from the alluvial to the Denver aquifer. Observed vertical gradients between the two aquifers are typically near 0.10 ft/ft. In areas where the alluvial aquifer is in contact with poorly cemented subcropping sandstone and siltstone lenses or fractured claystones of the Denver formation, the two aquifers are considered hydraulically connected and can act as one hydrostratigraphic unit. Potentiometric differences between Denver formation sandstone units generally indicate downward ground-water movement. Flow trends in the Denver formation are discussed in more detail below.

Ground-Water Hydrology

58. Background. Thompson et. al. (1985), PMSO (1987), and ESE (1988) provide a hydrologic history of the north boundary and identify influences on ground-water flow. Interaction of the aquifer with First Creek has not been defined though it appears there is interaction depending on relative elevations of First Creek and the adjacent ground water. Annual precipitation fluctuations appear to have little effect on ground-water levels in the alluvial aquifer. Though precipitation in FY87 (19.05 in.) exceeded that for FY85 or 86 or the annual average of 15 in./yr., ground-water levels in the vicinity of the NBS fell. The effect of higher system flow rates more than offsets the higher precipitation. Longer term precipitation trends may have a greater influence on ground-water levels though this influence has not been



quantified, PMSO(1987). Several other historic and potential sources of recharge have been identified, Thompson et. al. (1985), and ESE (1988), but not quantified.

59. Water levels. Ground-water level maps, Plates 1-4, ESE 1988, and ground-water level profiles, Figures 31-34 are the data displays used to evaluate ground-water flow in FY87 and changes in ground-water configuration relative to previous years. Most of the levels shown on the profiles are from water level readings taken in the monitoring wells though some are based on ground-water contours from water level maps. Previous years' data (contour maps and profiles) are contained in Thompson et. al., 1985 (pre November 1984) and PMSO, 1987 (FY85 and 86).

60. Water level maps. Water table elevation maps, Plates 1-4, indicate the seasonal fluctuations have dampened and ground-water levels are relatively stable in FY87 compared with FY85 and 86, (PMSO, 1987). The seasonal fluctuations mentioned in PMSO, 1987, (ground-water levels upgradient of the system higher in the second and third quarters than in the first and fourth quarters) continues but is much less pronounced and the average FY87 upgradient ground-water levels are lower than FY85 and FY86. System flow rates were lower in the second and third quarters than in the first and fourth quarters of FY87, Figure 4. Also the yearly average system flow rate for FY87 was somewhat higher than FY85 and FY86:

<u>FY</u>	<u>Average System Flow Rate</u>
85	225.7
86	240.1
87	249.3

61. Water level profiles. Profiles I, II, and III; Figures 31, 32 and 33 (location shown on Plate 7) validate the trends of the ground-water contours described above; cyclic changes were dampened and water levels were generally lower in FY87 than in the preceding two FYs. Profiles I and II reflect the influence of First Creek near wells 24186 and 24104. The figures compare FY87 data (plotted points) with the range of FY86 data. Figure 34, a composite of Profile III ranges, shows FY87 water levels at or near historic lows.

62. Ground-water flow toward the NBS. Ground-water flow toward the NBS for FY87 is estimated to be 230 gpm which is within the range of 200-250 gpm

PROFILE I NEAR DW LINE

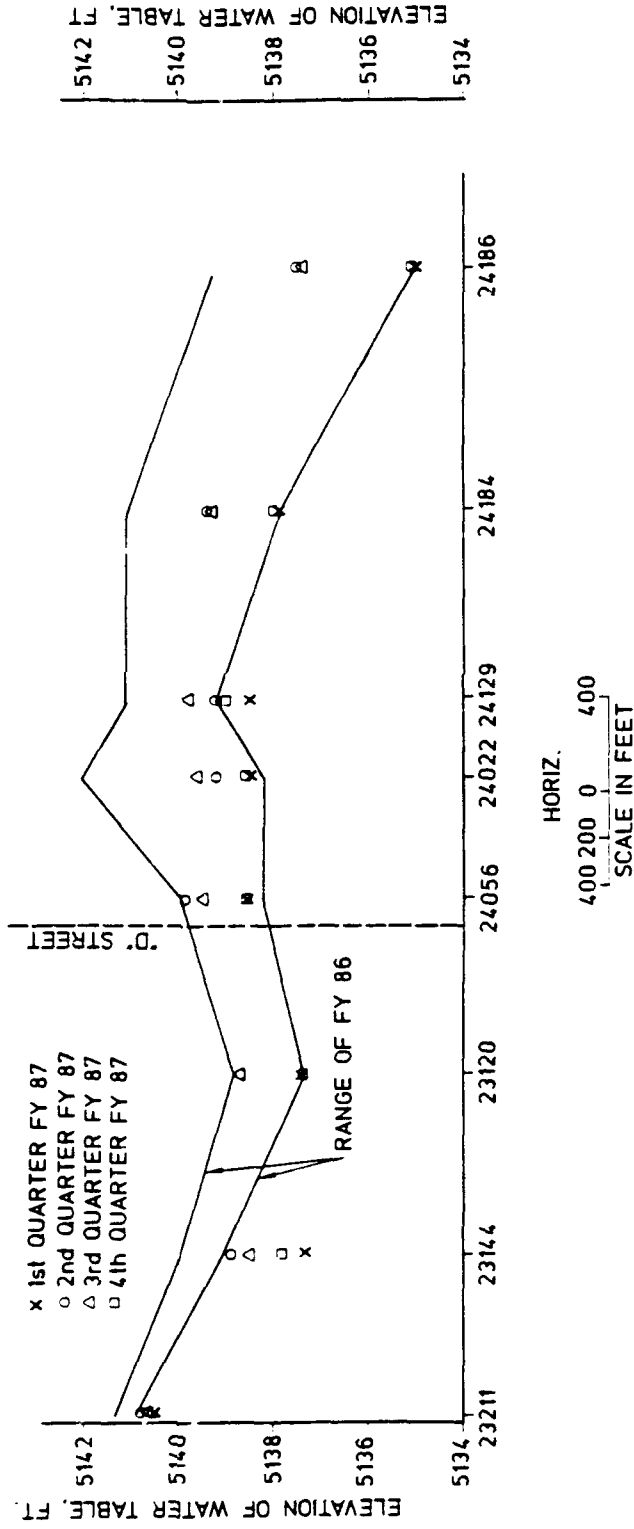


Figure 31. Profile I, NBS, FY87

HORIZ.
400 200 0 400
SCALE IN FEET

PROFILE II APPROXIMATELY 1200 FT. UPGRADE OF DW LINE

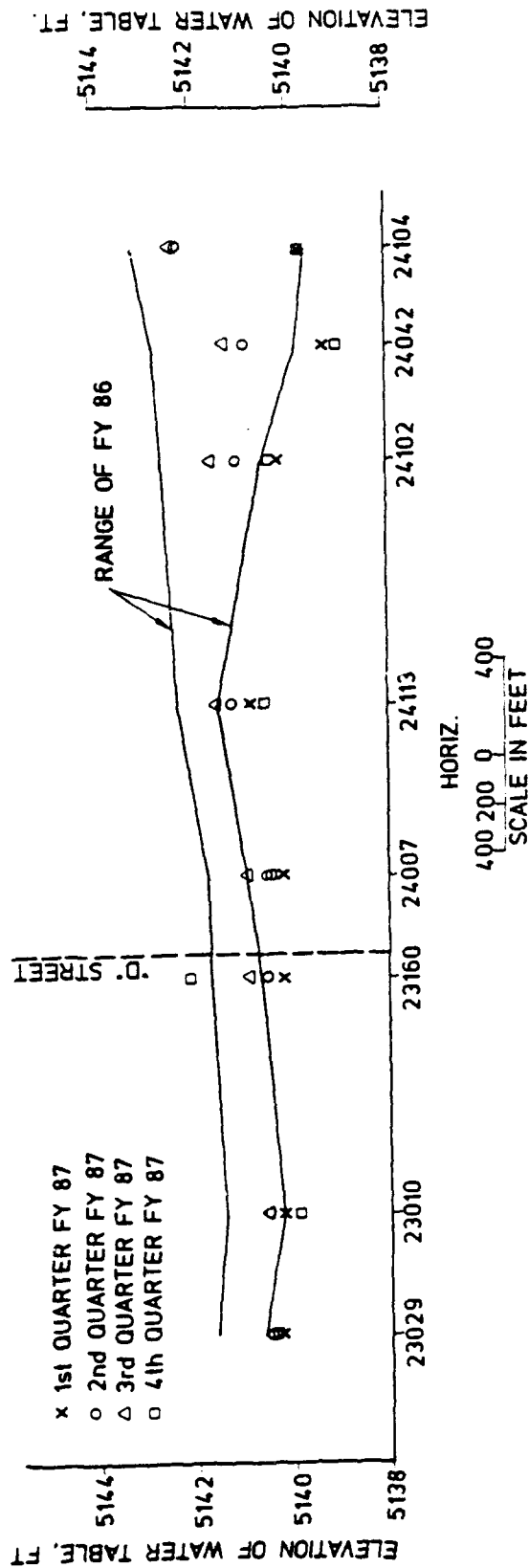


Figure 32. Profile II, NBS, FY87

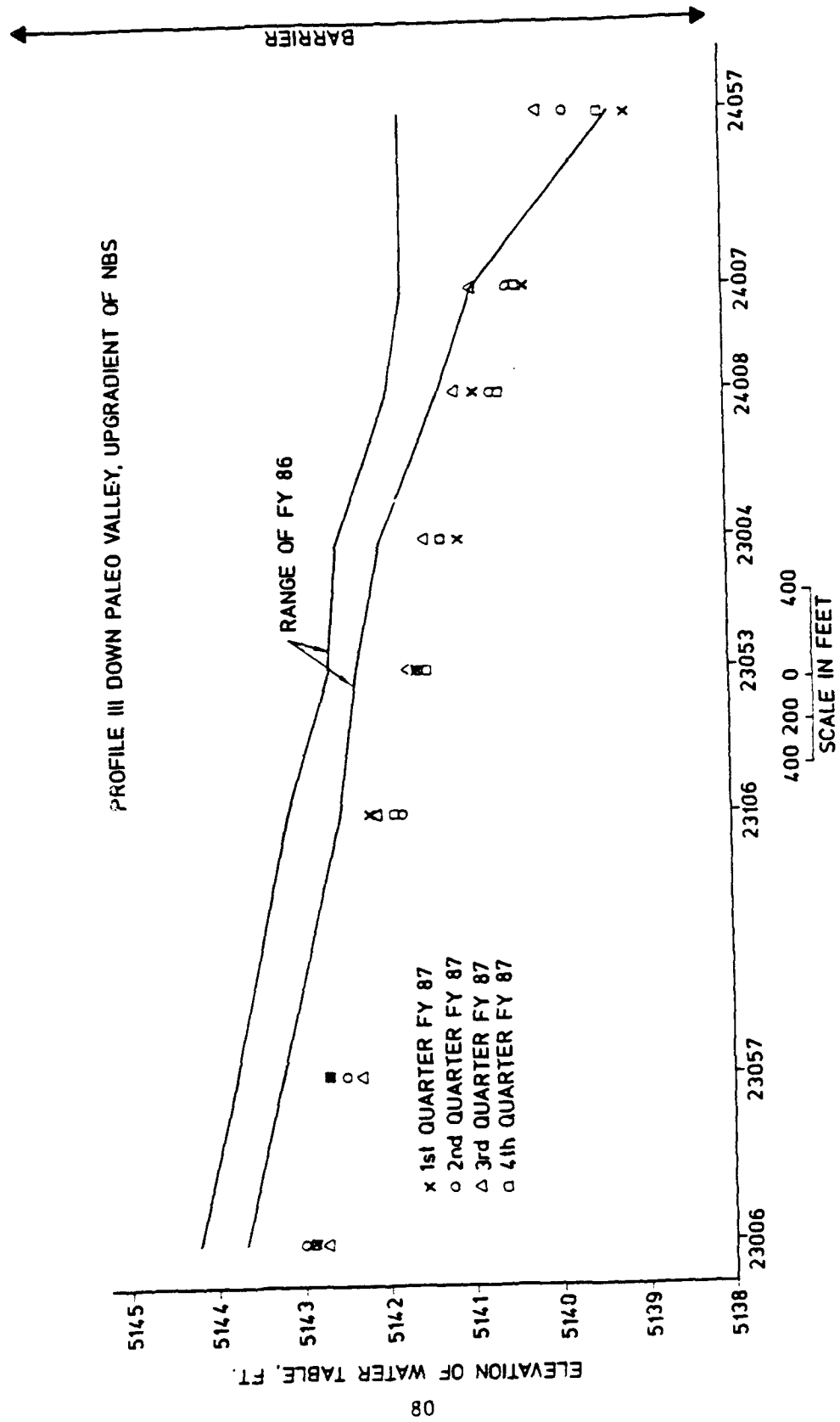


Figure 33. Profile III, NBS, FY87

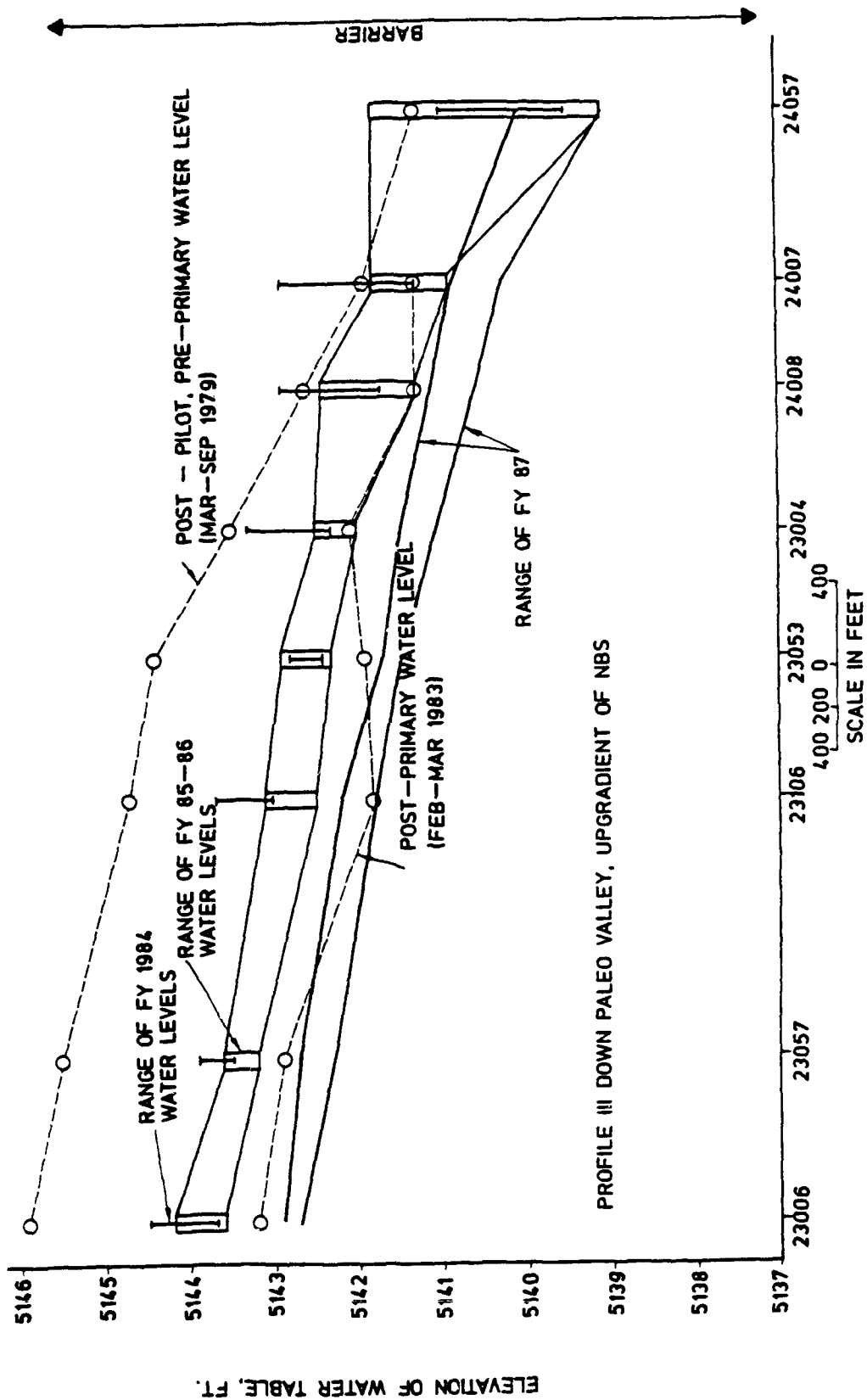


Figure 34. Profile III, Historic water levels NBS

estimated for FY85 and 86, (PMSO, 1987). The FY87 estimate is based on the following rationale and calculation. System flow rates were higher in the last half of FY86 and the first third of FY87 than for FY85 and the first half of FY86, PMSO (1987) and Figure 4. The lower ground-water levels of FY87 can be attributed to these higher system flow rates.

63. The composite Profile III, Figure 34, and ground-water level maps, Figures 25A-25D, ESE (1988), provide an estimate of the average drop in water level FY86 to FY87 and the size of the affected area of the aquifer up gradient of the NBS. The flow required to lower the ground-water level is based on the following assumptions and reasoning:

a. Area upgradient of the NBS affected by drop in water table = 6000 ft E-W by 5000 ft N-S (essentially the area between the 5145 ft contour and the bentonite barrier-the 5145 ft contour upgradient of the NBS remains fairly stable with time and thus can be considered a constant head boundary defining the upgradient limit of NBS influence on ground-water levels)

b. Average drop in water table elevation over the area = .50 ft

c. Apparent specific yield = 0.10 (ESE 1988)

c. Volume of water yielded by a decrease in water levels of .50 ft:
 $\text{vol} = 0.10 \times .50 \text{ ft} \times 6000 \text{ ft} \times 5000 \text{ ft} = 1,500,000 \text{ ft}^3$
 $= 11,220,000 \text{ gallons}$

d. Flow rate, q, required to remove this volume in one year.

$$q = 11,220,000 \text{ gal/yr} / 518400 \text{ min/yr} \\ = 21.6 \text{ gal/min}$$

This calculation shows that the natural ground-water flow toward the NBS is being exceeded by 21.6 gpm. Thus, for FY87, the system flow rate minus the flow rate required to lower ground-water levels is equal to the ground-water flow toward the system ie, $249.3 \text{ gpm} - 21.6 \text{ gpm} = 227.7 \text{ gpm}$ or approximately 230 gpm.

64. Flow trends in the Denver formation. The following discussion is summarized from (ESE) (1988). ESE analyzed well hydrographs for the Denver formation in the vicinity of the NBS for Task 25. Most of the wells upgradient of the NBS indicate declining water levels from 1981 to 1987. But wells in the vicinity of First Creek drainage, for example 24120 and 24108, indicate increasing water levels from 1981 to 1986 and stable water levels for 1986 and 1987. The water level trends at those wells are probably due to the recharge of the aquifer from First Creek, or possibly to the influence of the North Boundary system. Wells such as 23177, immediately upgradient of the system, also appear to exhibit a recent decline in water levels. ESE mapped ground water contours for the third quarter of FY87 for each of the stratigraphic units. Flow in the different hydrostratigraphic units is generally north and northwest.

65. ESE estimated the shortest time for pollutants to travel from Section 26 to the north boundary through Denver sands would be more than 700 years. This time was calculated using the average high K for sand zones 2, 3, and 4 (see Figure 29) of 5.5 gpd/ft, and the lowest measured value of Denver sand porosity of 0.33. ESE concluded that in most areas contaminants are moving through the alluvium and then entering the Denver formation sand zones some distance from the contaminant source areas.

66. The Denver formation can potentially become contaminated through local interactions between the alluvial and Denver formation aquifers. ESE assessed the potential for vertical contaminant migration near the NBS using water-level data obtained during the Task 25 and 36 studies. Hydrographs of wells in the alluvial and Denver formation aquifers indicate hydrologic interaction between the aquifers. Cluster wells 24158 and 24159, screened in the alluvium and hydrostratigraphic zone 1, respectively, exhibit similar water level fluctuations. Cluster wells 23185, 23186, and 23187, screened in hydrostratigraphic zones 1, 2, and 4, respectively, exhibit many of the same seasonal water level fluctuations.

67. Denver ground-water levels and alluvial ground-water levels are not coincident throughout the NBS. Lower potentiometric levels in Denver formation wells relative to levels in the alluvial aquifer indicate a potential for the downward movement of water. Downward potential exists upgradient of the soil-bentonite barrier of the NBS. Downward vertical gradients of approximately 0.10 ft/ft were measured in wells within 500 ft of the barrier.

Offpost, downward gradients were also observed between alluvial well 37374 and Denver well 37379 and between alluvial well 37389 and Denver well 37390 approximately 1000 ft north of 96th Avenue. Higher potentiometric levels in Denver formation wells relative to alluvial wells indicate a potential for upward movement of water. Upward vertical gradients were observed between alluvial well 37370 and Denver well 37371, both located offpost in Section 14. Immediately downgradient of the pilot portion of the soil-bentonite barrier, the potentiometric surface of Denver sand zone 2 is coincident with or higher than the alluvial aquifer water level.

68. ESE assessed potential flow between Denver formation aquifers by evaluating differences in water elevations between clustered wells constructed in adjacent Denver formation sandstone units. ESE reported assessments for cluster wells upgradient of the barrier and in cluster wells 350 ft down gradient of the barrier and up to 1000 ft north of 96th Avenue. In all cases, downward vertical gradients between Denver formation zones were observed. Downward gradients were 0.05 ft/ft at all reported sites except at wells 23218 to 23219, 350 ft downgradient, where the measured gradient was 0.22 ft/ft.

Distribution of Contaminants

Background

69. Ground-water contamination at the north boundary of RMA is a result of the historical disposal of wastes from various activities conducted on RMA. The contaminants found in the ground water at the boundary can be associated with operation of the disposal basins, the sewage treatment plant, and the chemical and sanitary sewers. Historical data on the contaminants are discussed in Thompson et al. (1985).

70. The reader is referred to the ESE draft report (Task 25) "Boundary Control Systems Assessment Remedial Investigation," June 1988, for a detailed discussion and evaluation of concentrations and distribution of contaminants (Section 5.0) near the NBS. Interpretations presented in the ESE (1988) report incorporated all of the data collected in the Task 25 study area. The evaluation of alluvial contamination delineates the distribution and concentrations of contaminants historically investigated and also presents an assessment of analytes not previously evaluated.

71. ESE states that the distribution of compounds assessed in previous reports (PMSO, 1987), including DIMP, DCPD, DBCP, combined organosulfurs, chloride, and fluoride, exhibited a similar pattern for 1987, even though the monitoring network was different. The contaminant distribution pattern appears to follow several transport pathways but are not limited to just these pathways. The highest contaminant concentrations were generally detected in samples from the wells located along these major pathways.

72. ESE also concludes that the samples from the monitoring wells at the boundary of RMA exhibited generally lower levels of contamination than samples from wells upgradient of the recharge wells. Contaminant concentrations over time assessed in a group of offpost wells indicate that DIMP and DBCP concentrations in the offpost area downgradient of NBS have declined since 1978.

Contaminant Concentrations in Dewatering Wells

73. The contaminant isoconcentration maps developed for the study area illustrate the general distributions of the contaminants in the area during the study period. As previously noted, these distributions vary from year to year depending on the monitoring program conducted. In order to provide a more detailed picture of the distribution of contaminants in the area of the control system, contaminant concentrations found associated with each alluvial dewatering well were graphed with respect to the well number along the dewatering well line. Thus, each graph provides a visual representation of a particular contaminants distribution along the length of the system. Yearly graphs for each contaminant can be compared to assess trends between years.

74. Based on the availability of data, graphs were developed only for aldrin, chloride, combined organo-sulfur compounds, DBCP, DCPD, DIMP, dieldrin, endrin, and fluoride for FY86 and FY87. These graphs are presented in Figures 35 thru 52. The well numbers are plotted in physical order from west to east. Each graph presents the data collected for each well during the year. The vertical lines associated with each well number represent the range of concentrations found (maximum and minimum) with the mean values for each well connected by a dotted line. A mean value was only computed for sets of data where 70 percent or more of the readings were above the detection limit. When this criterion was met, values falling below the detection limit were

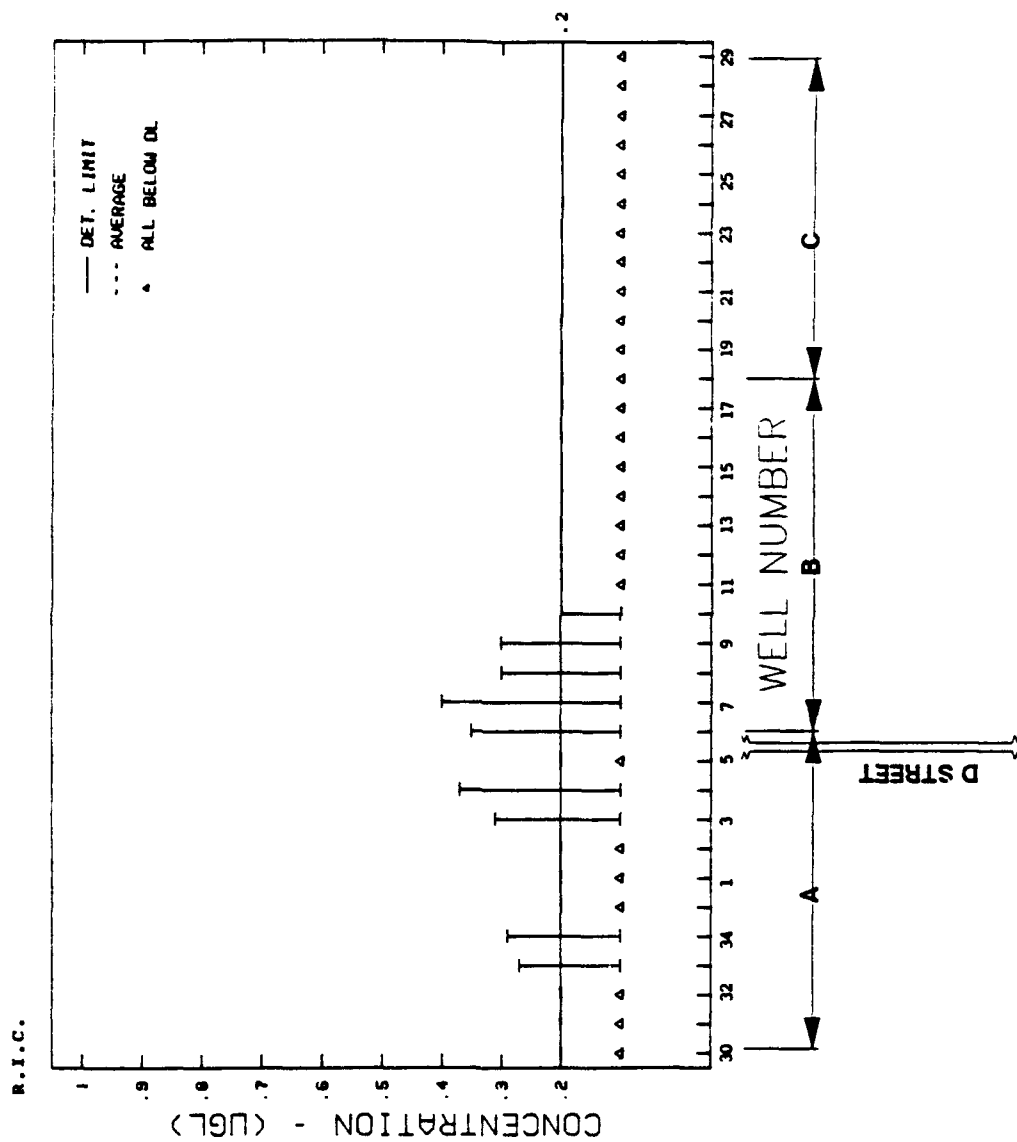


Figure 35. Aldrin concentrations in NBS dewatering wells, FY86

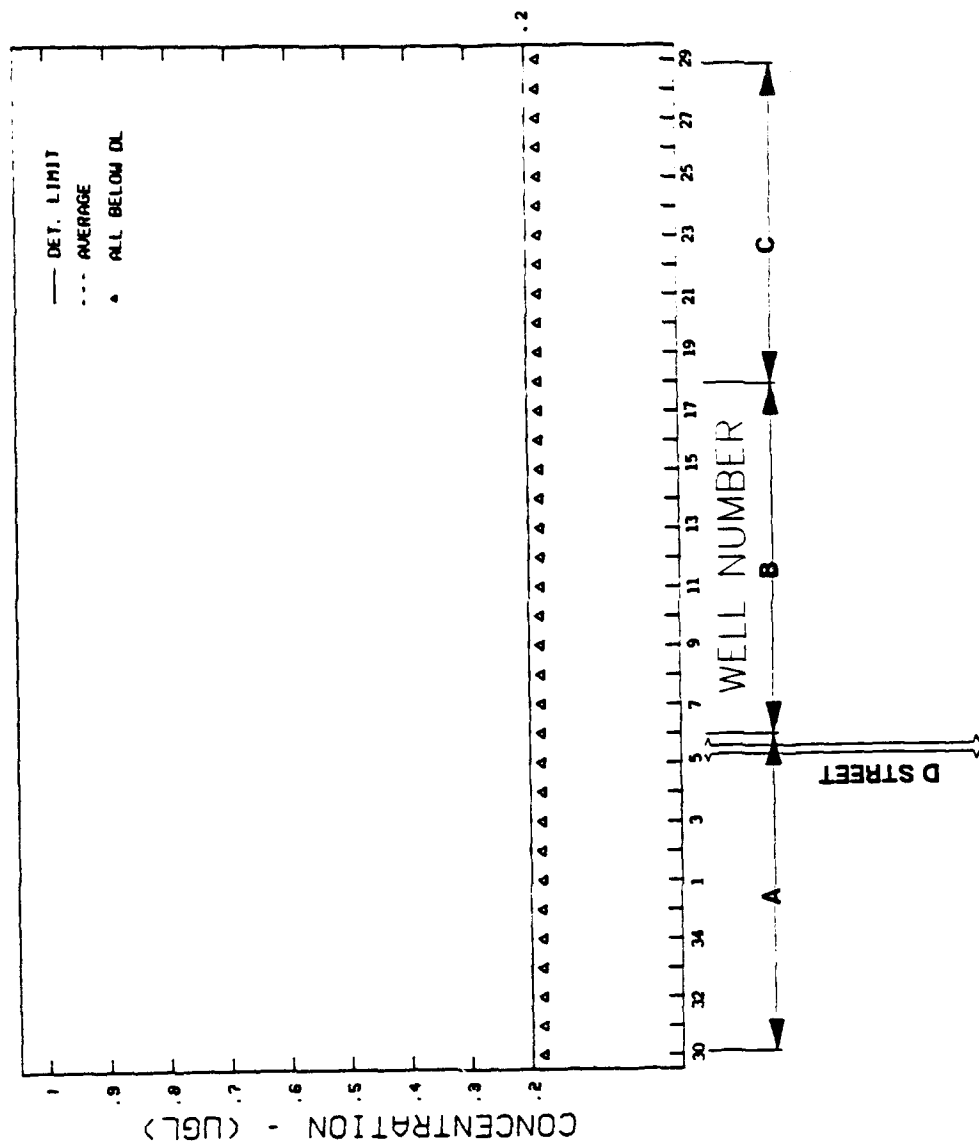


Figure 36. Aldrin concentrations in NBS dewatering wells, FY87

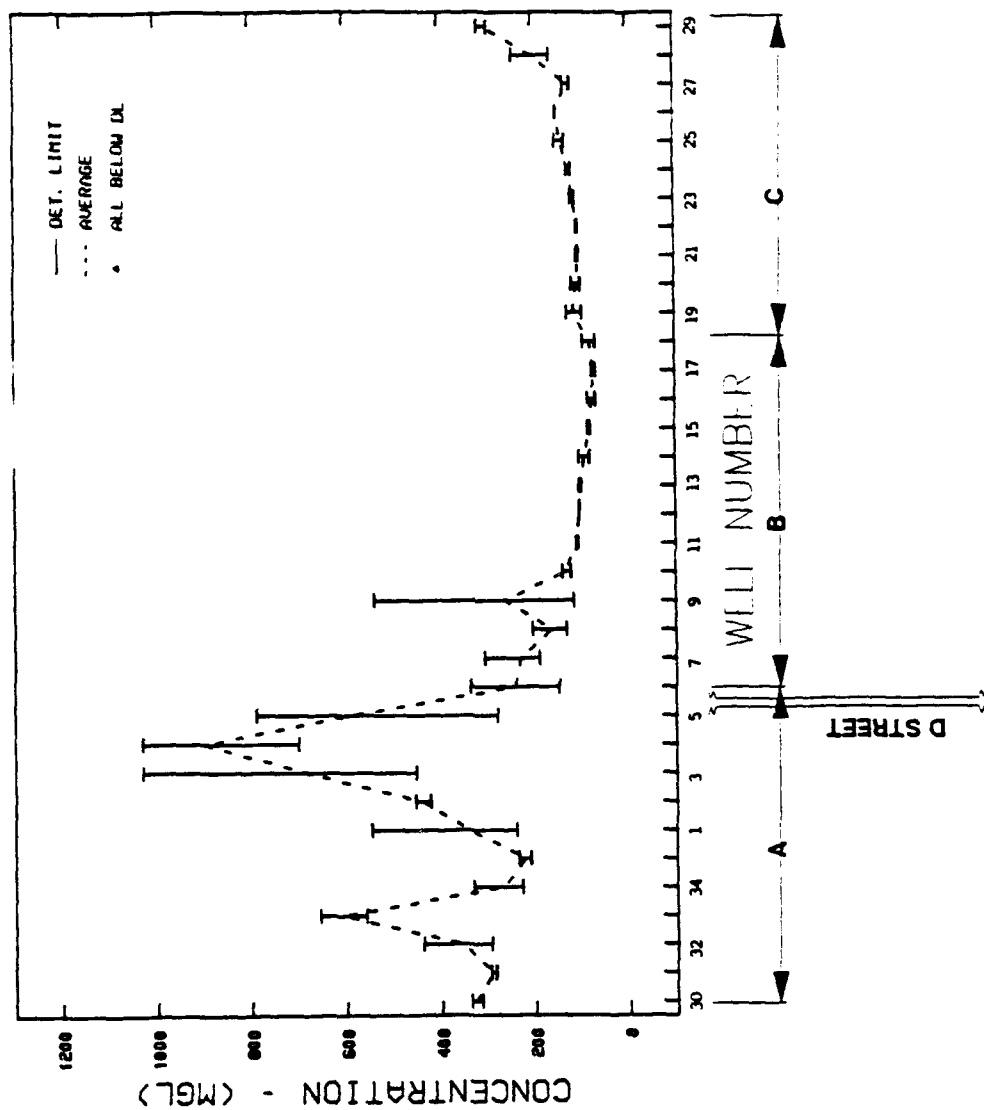


Figure 37. Chloride concentrations in NBS dewatering wells, FY86

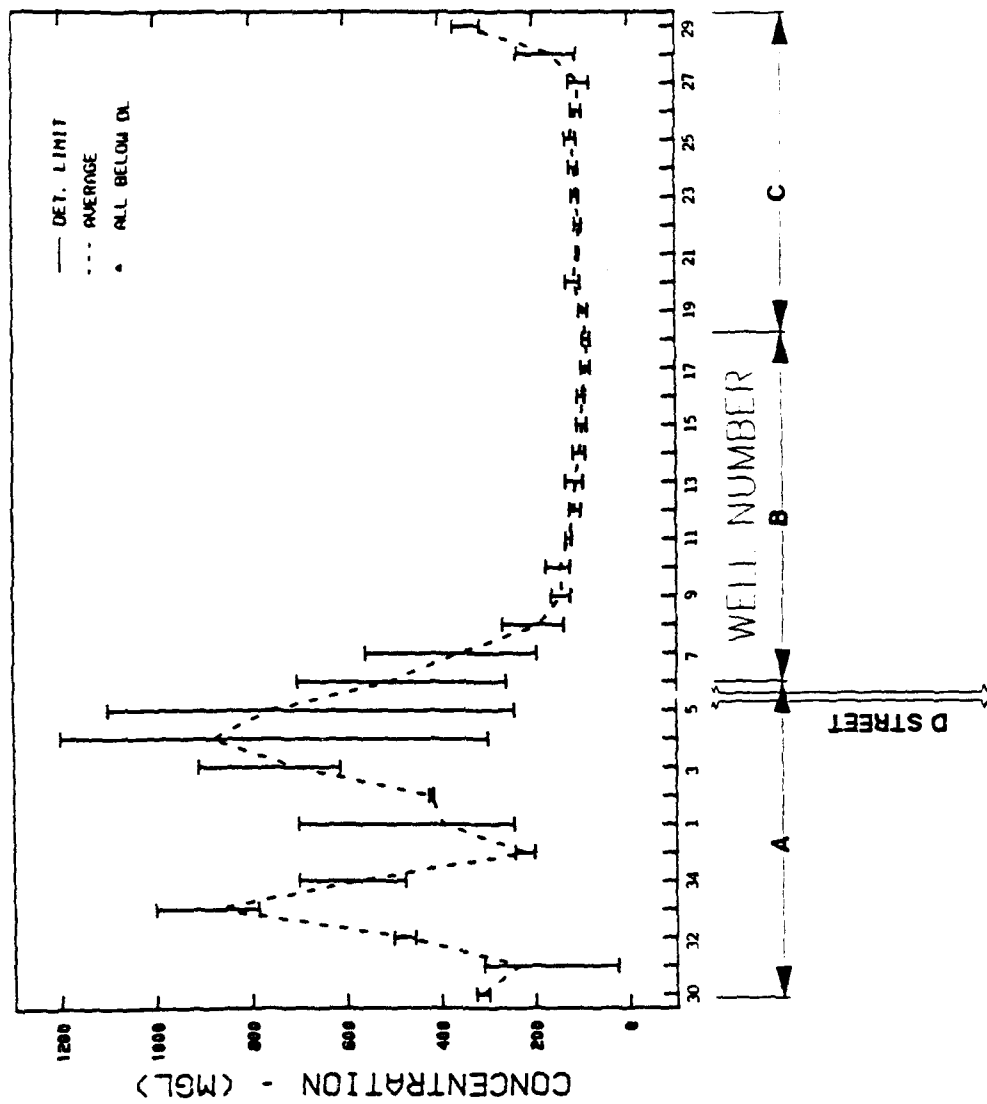


Figure 38. Chloride concentrations in NRS dewatering wells, FY87

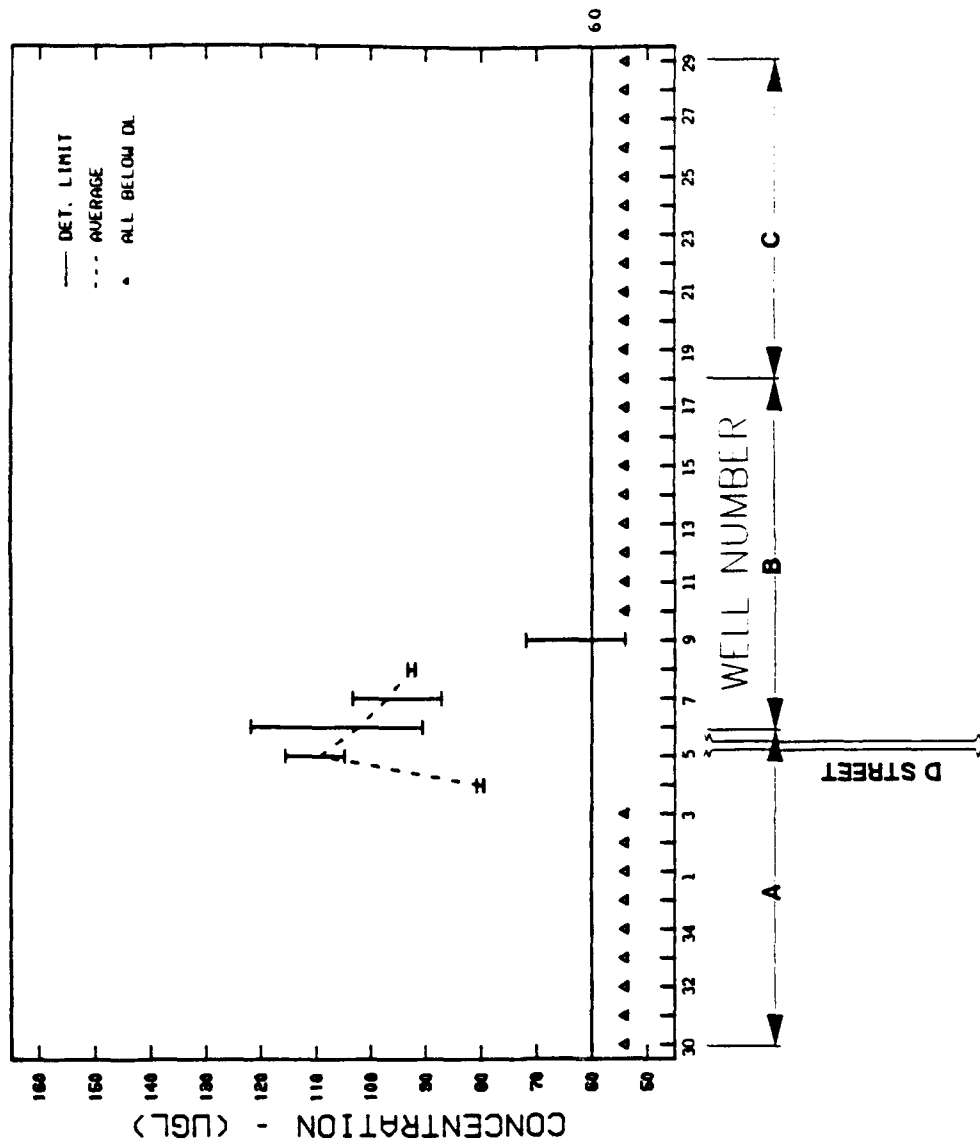


Figure 39. Combined Organo-Sulfur concentrations in NBS dewatering wells, FY86

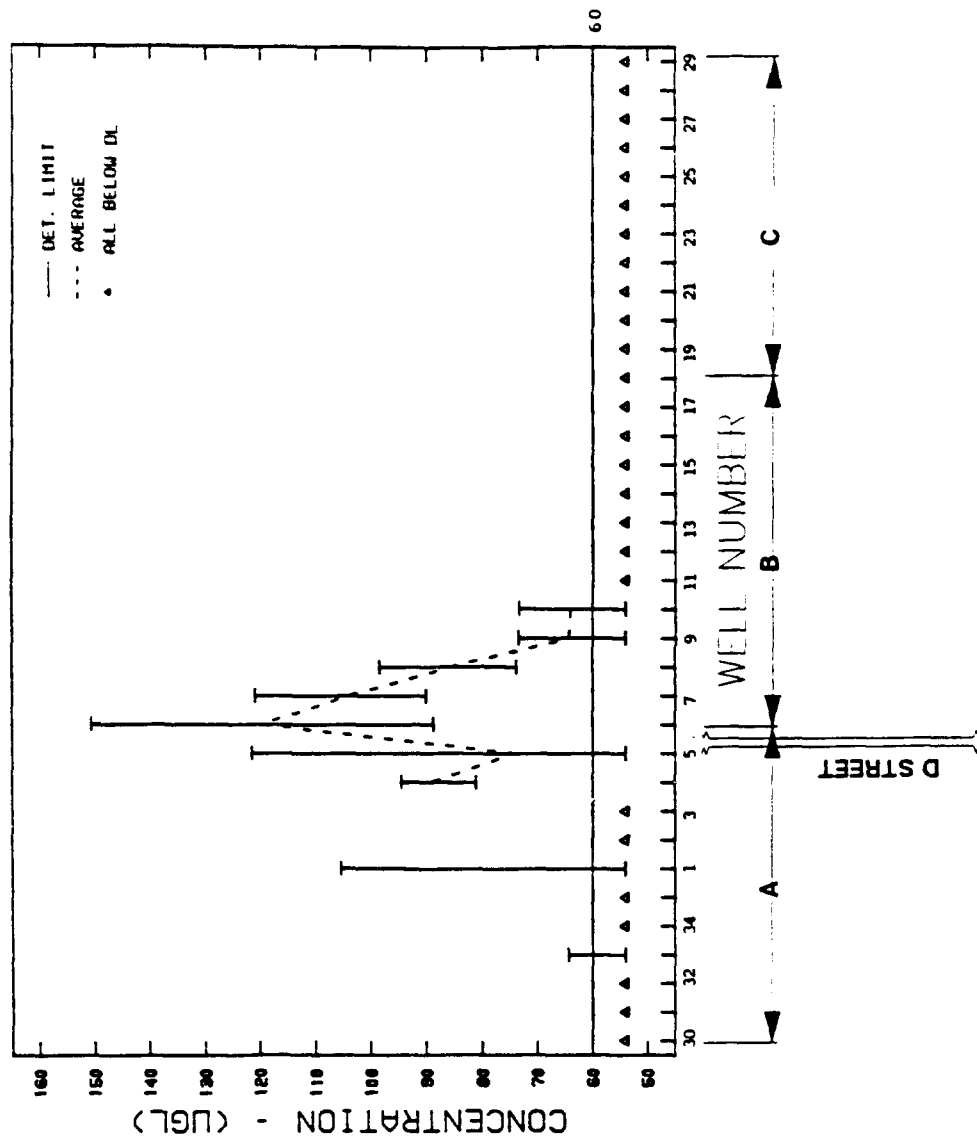


Figure 40. Combined Organo-Sulfur concentrations in NBS dewatering wells, FY87

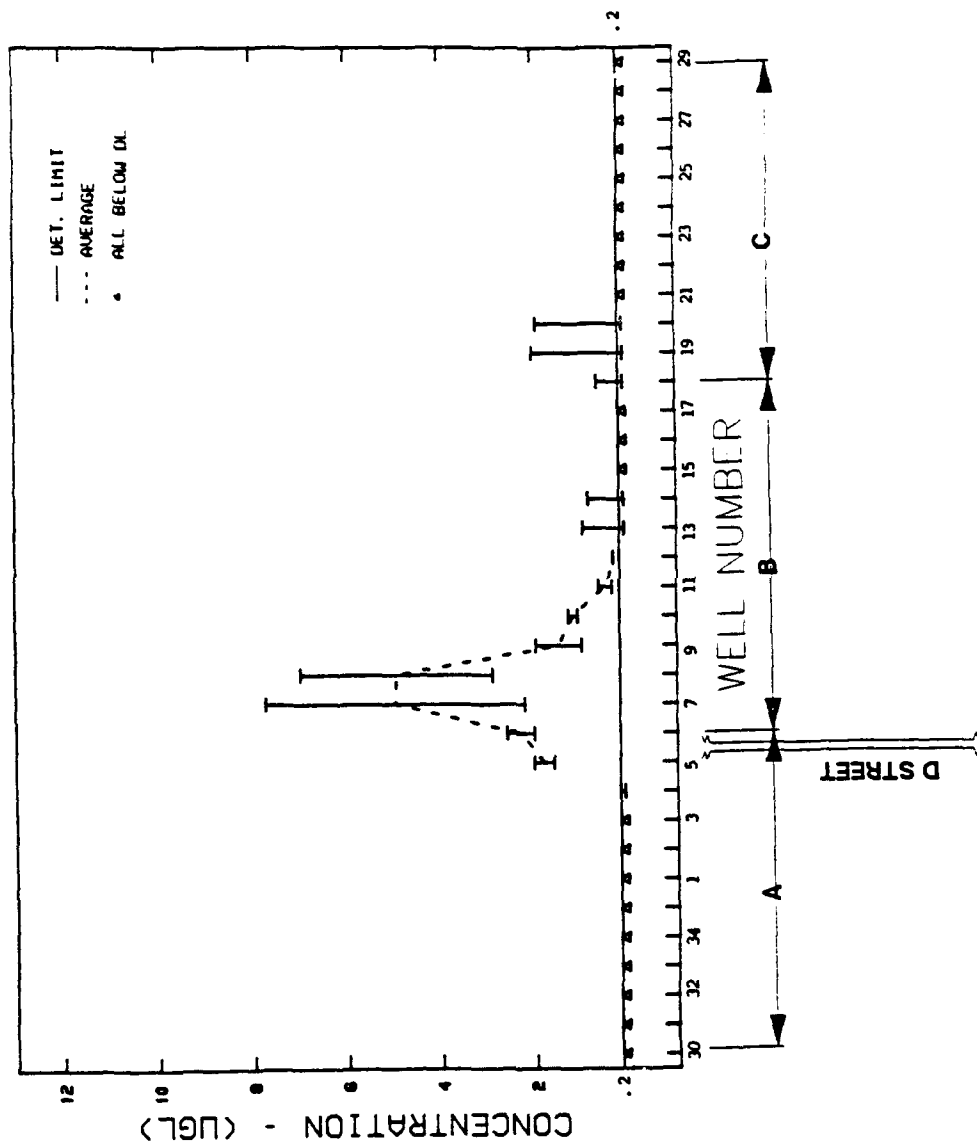


Figure 41. Dibromochloropropane (DBCP) concentrations in NBS dewatering wells, FY86

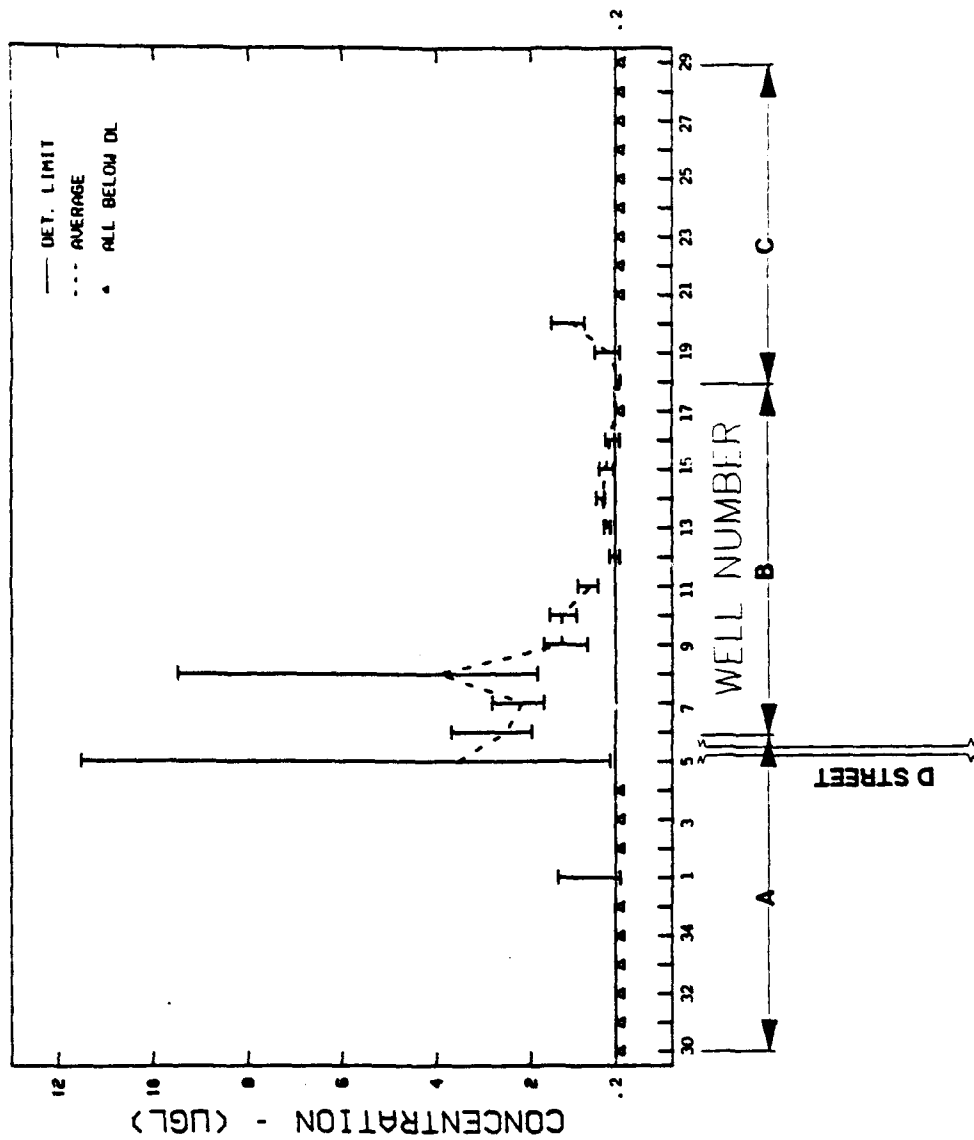


Figure 42. Dechlorochloropropane (DBCP) concentrations in NBS dewatering wells, FY87

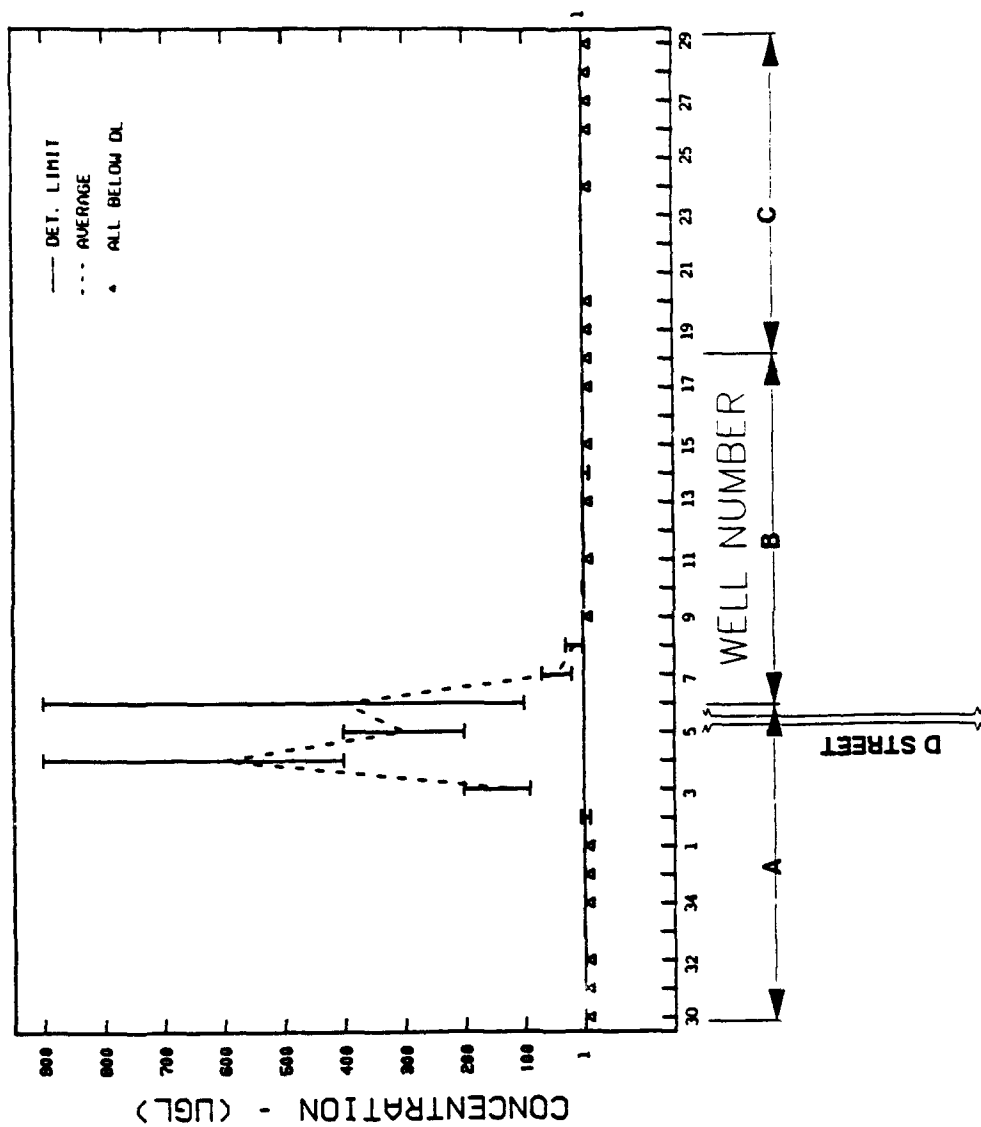


Figure 43. Dicyclopentadiene (DCPD) concentrations in NBS dewatering wells, FY86

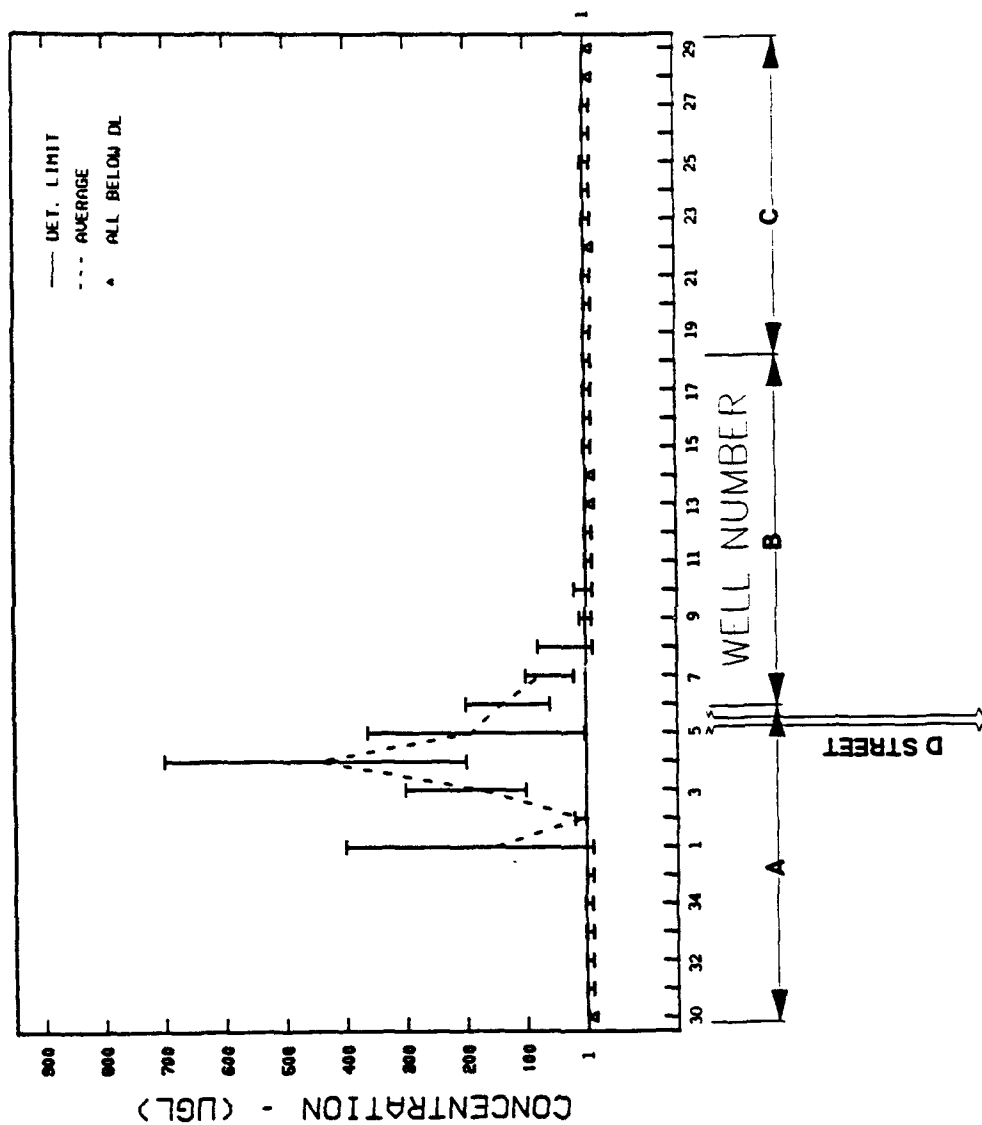


Figure 44. Dicyclopentadiene (DCPD) concentrations in NBS dewatering wells, FY87

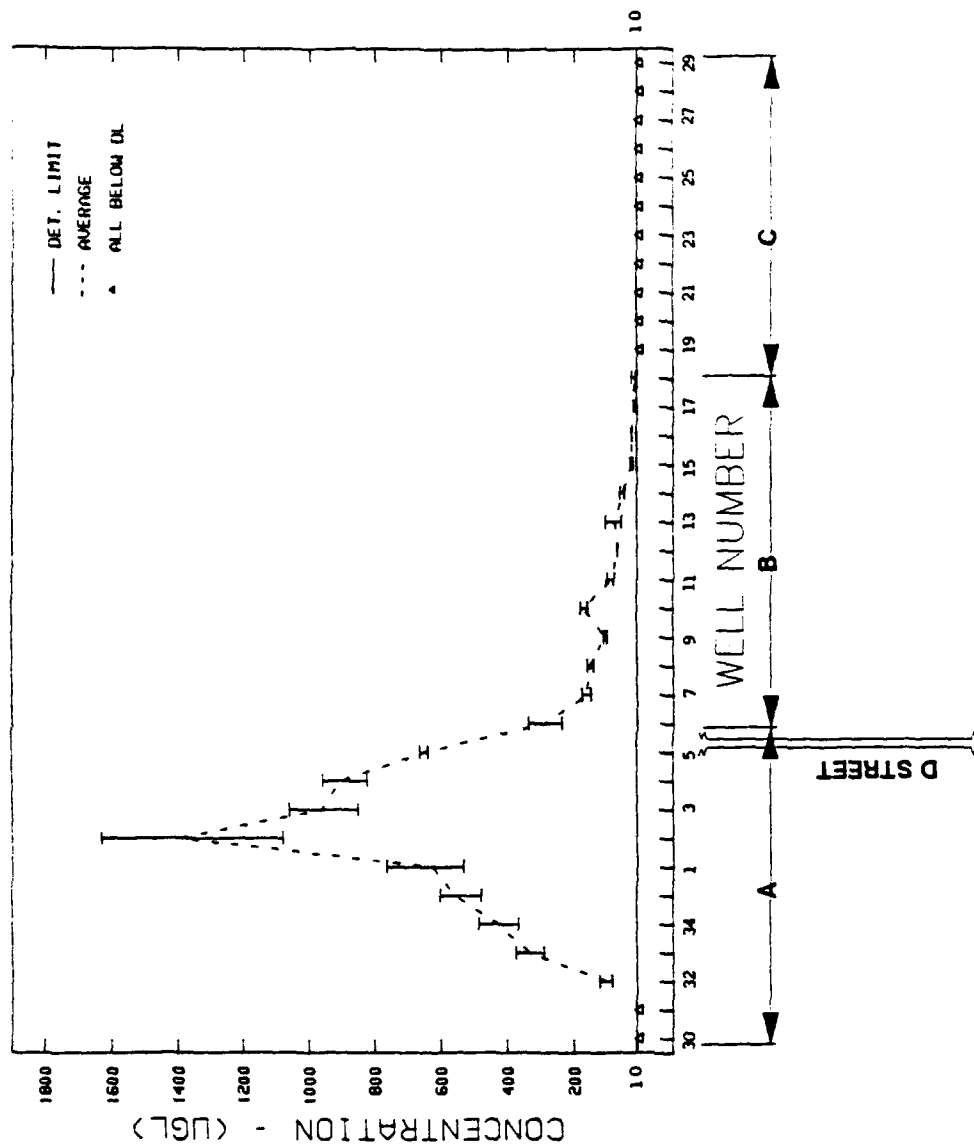


Figure 45. Dusopropylmethylphosphate (DMP) concentrations in NBS dewatering wells, FY86

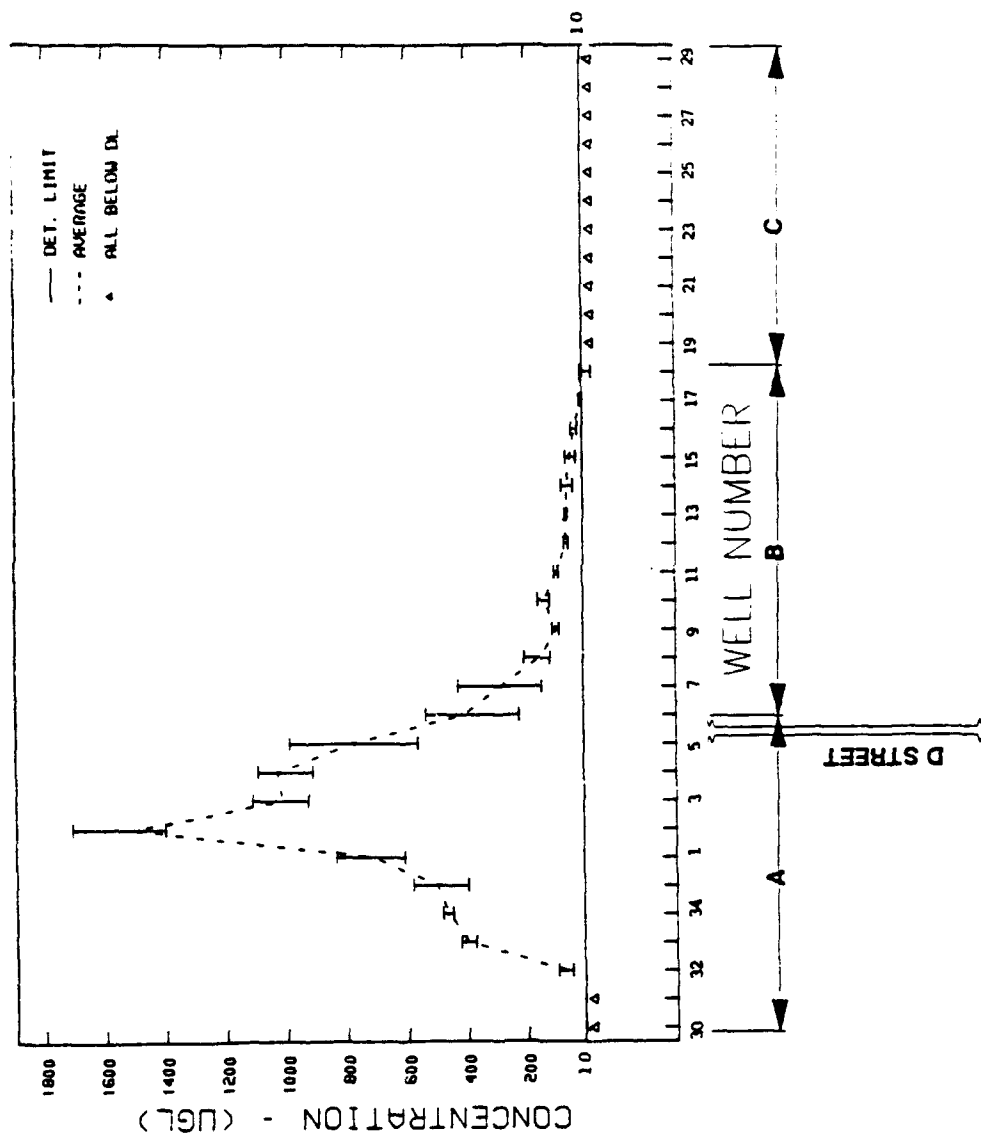


Figure 46. Dusopropylmethylphosphorate (DIMP) concentrations in NBS dewatering wells, FY87

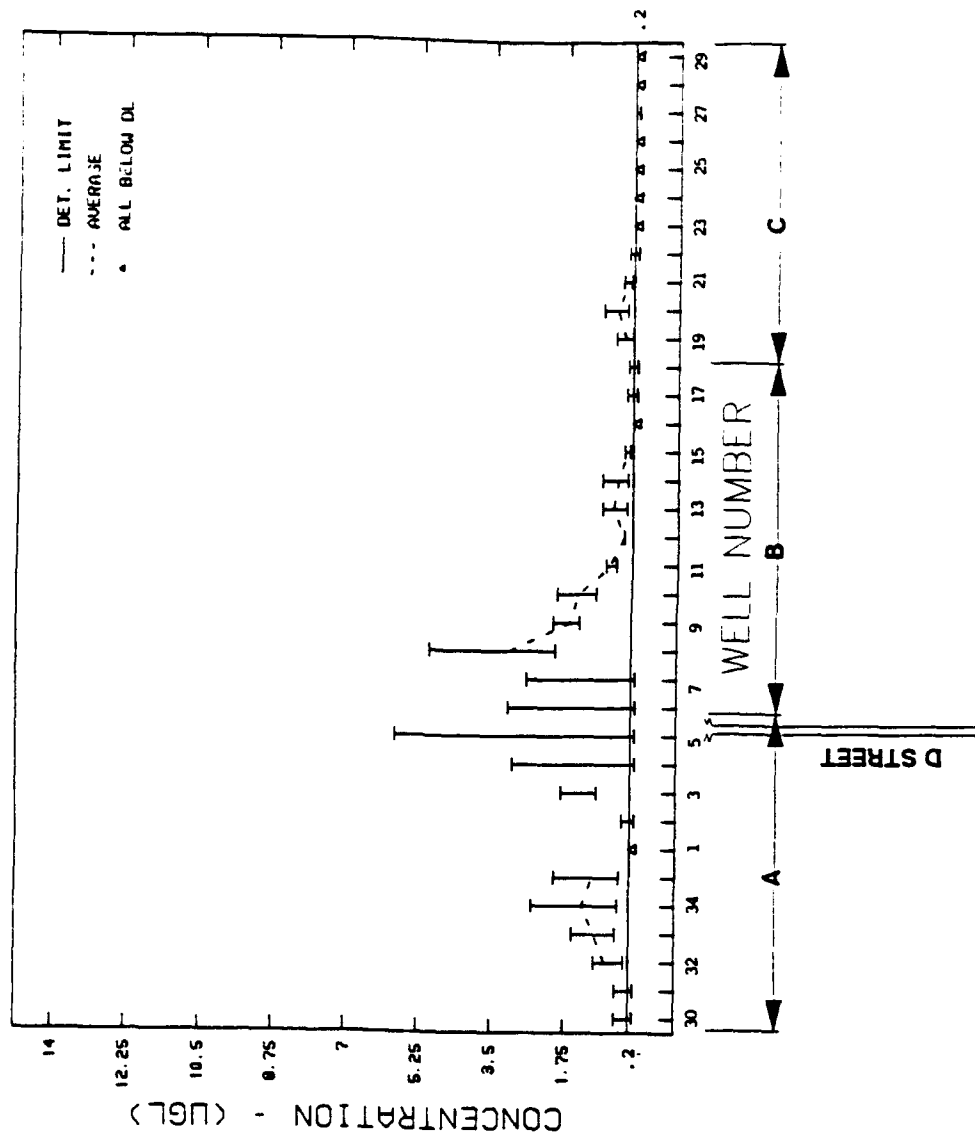


Figure 47. Dieldrin concentrations in NBS dewatering wells, FY86

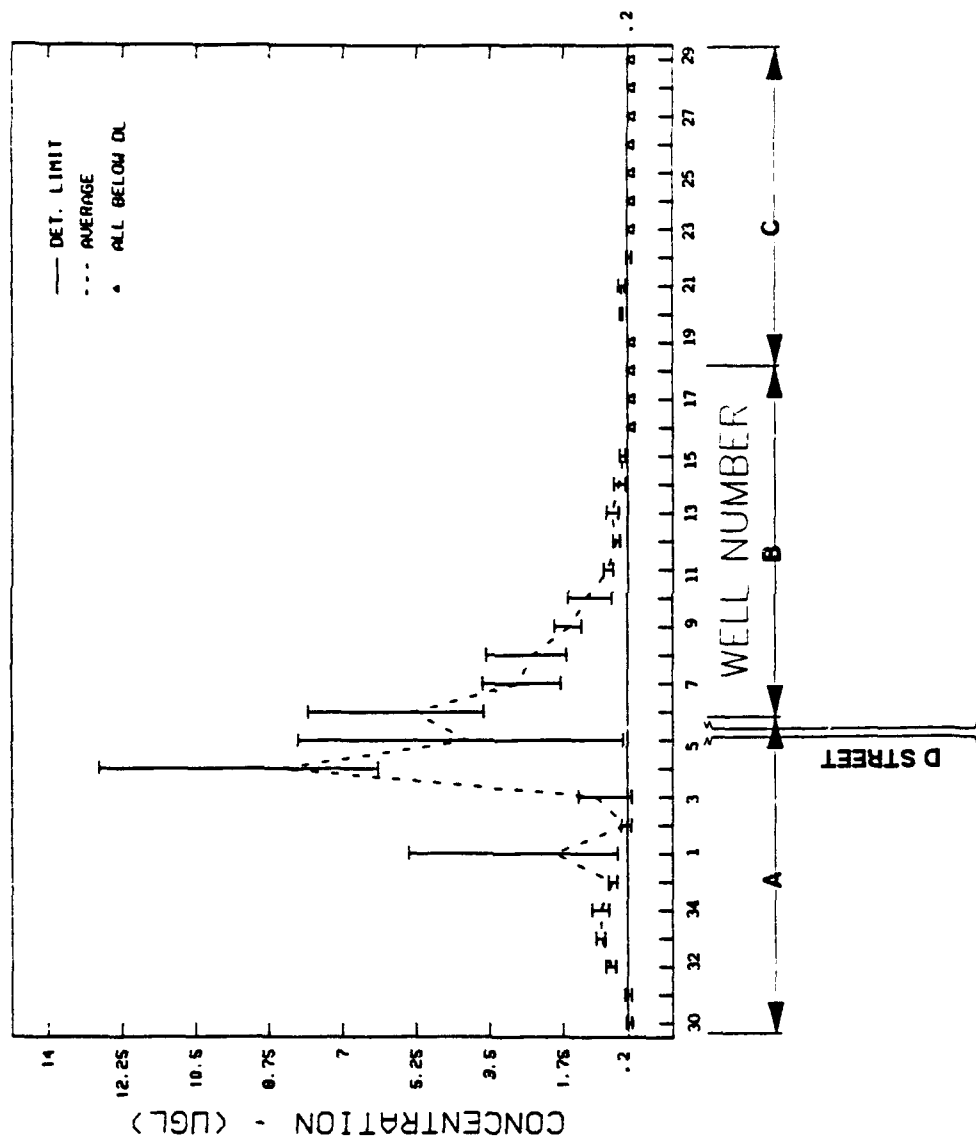


Figure 48. Dieldrin concentrations in NBS dewatering wells, FY87

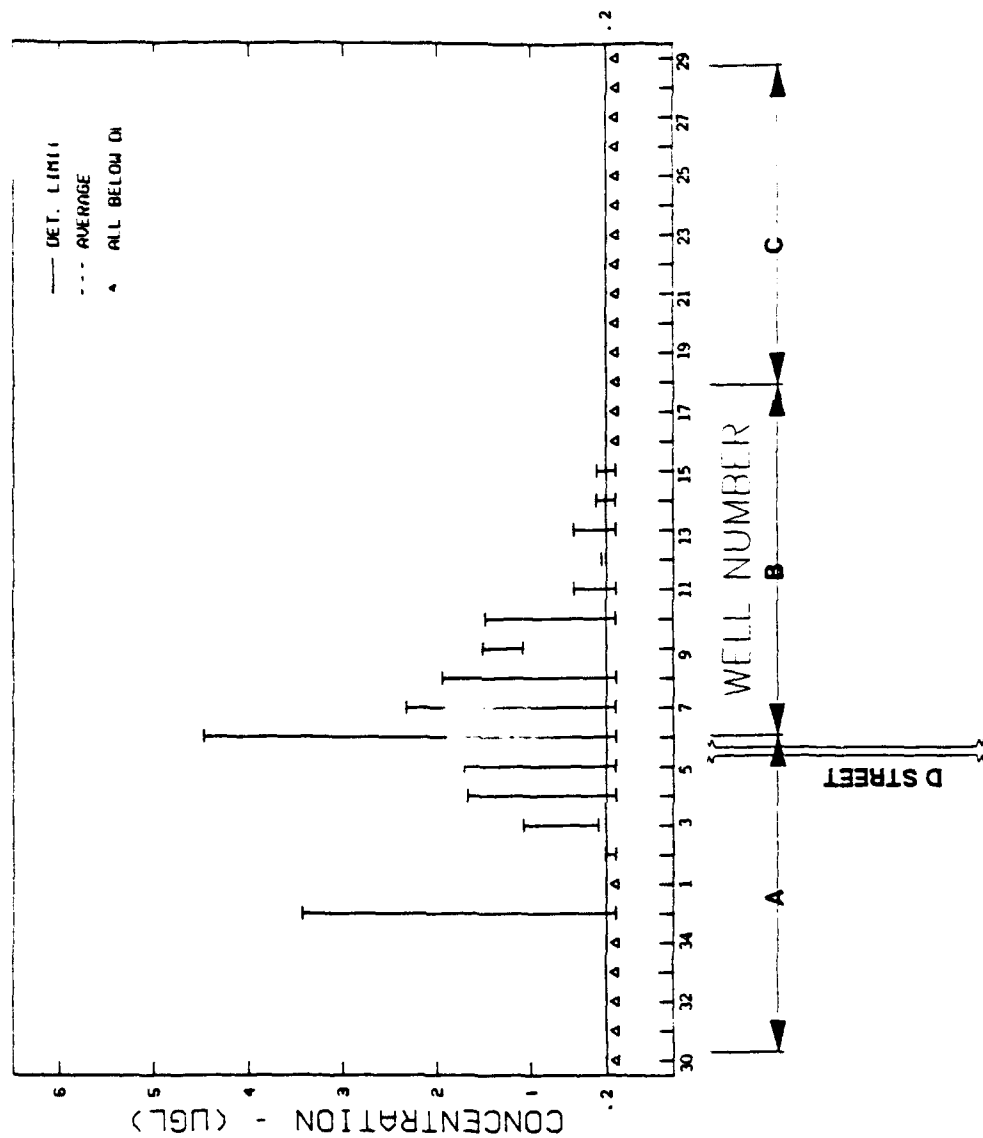


Figure 49. Endrin concentrations in NBS dewatering wells, FY86

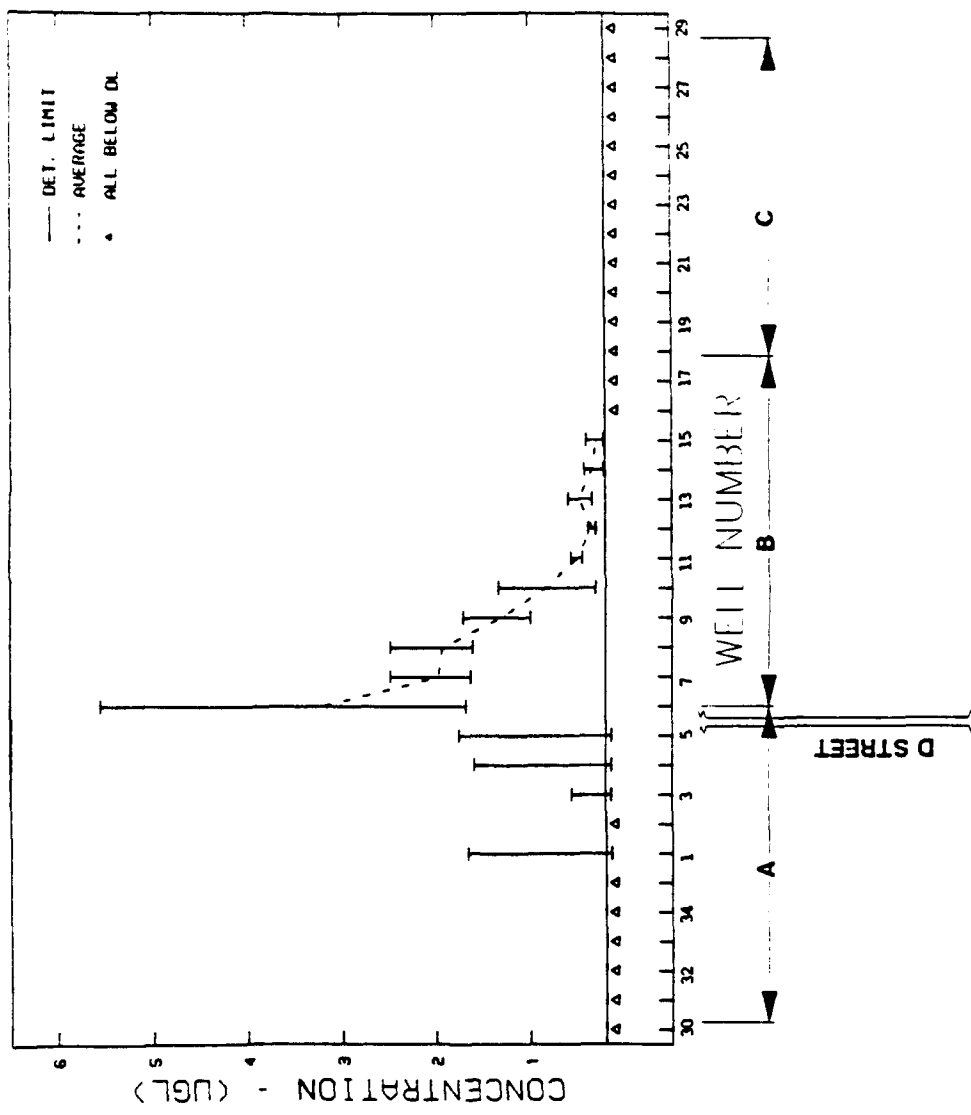


Figure 50. Endrin concentrations in NBS dewatering wells, FY87

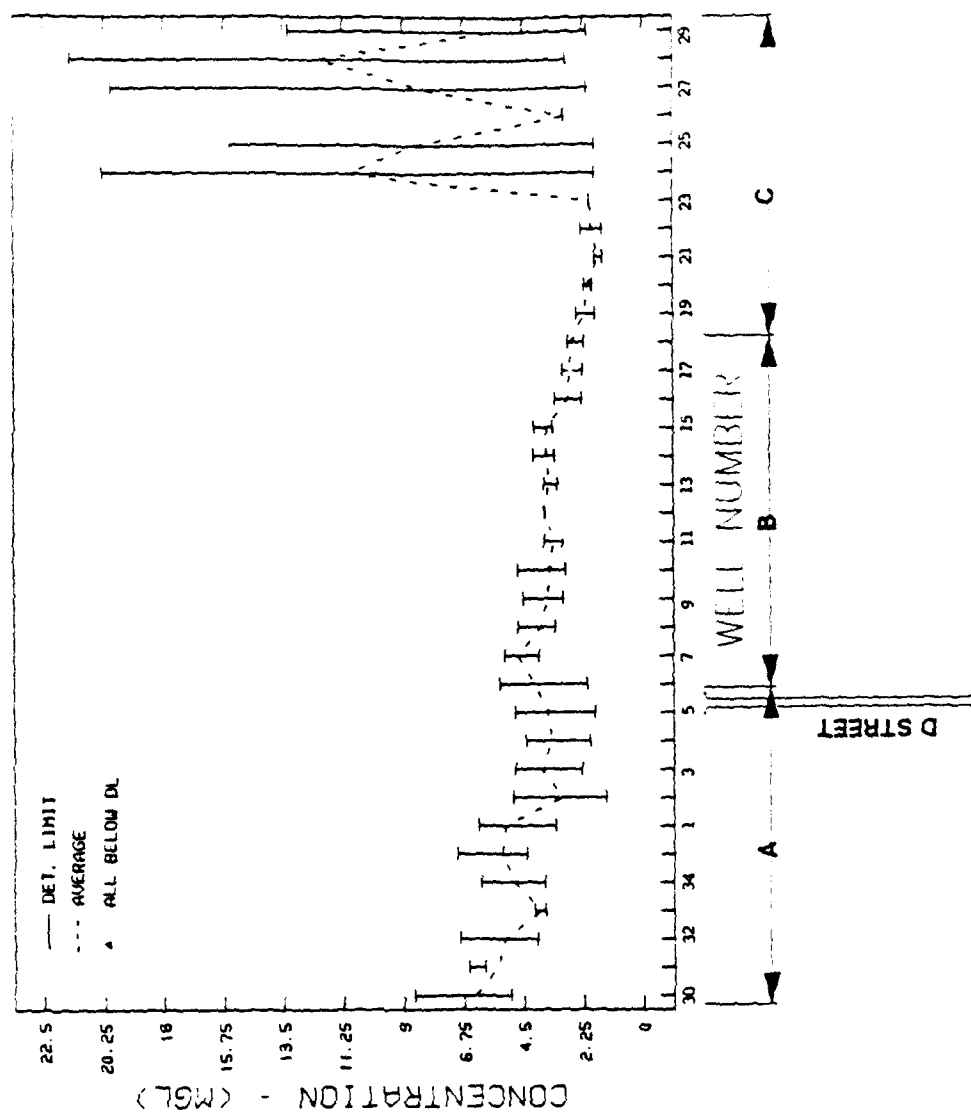


Figure 51. Fluoride concentrations in NBS dewatering wells, FY86

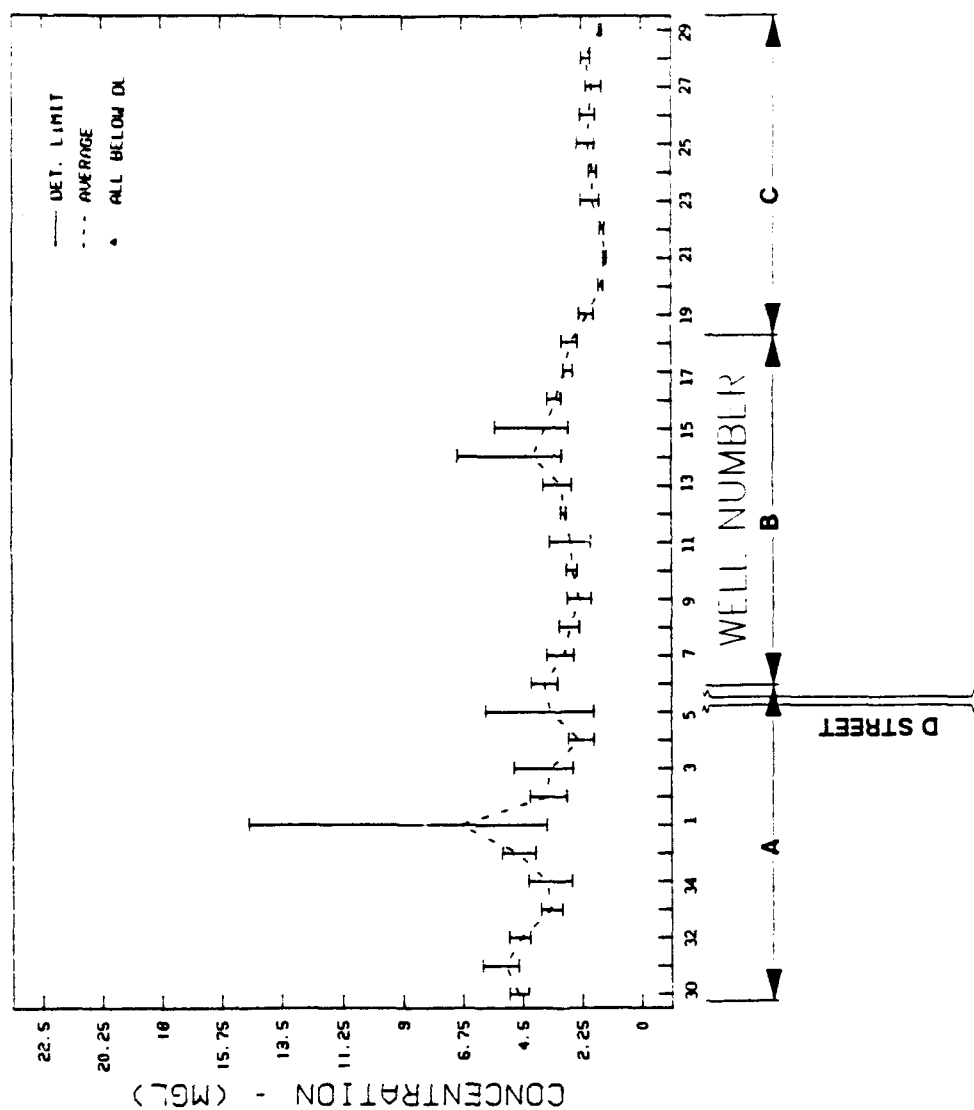


Figure 52. Fluoride concentrations in NBS dewatering wells, FY87

made equal to the detection limit and included in the computations. A single triangle indicates that all values were below the detection limit. A statistical summary of all the data used to develop the graphs is presented in Appendix D. It should be noted that the maximum number of samples collected from each well was four with fewer samples collected in many cases.

Aldrin

75. During FY86, the highest concentrations of aldrin (Figure 35) were found along the western half of the control system with a maximum concentration of 0.4 ppb found associated with Well No. 7. The majority of the concentrations found above the detection limit were found associated with wells in the area of the original North Boundary System. No concentration of aldrin above the detection limit were found associated with the wells along the eastern half of the system. No means were calculated for any of the wells indicating the majority of the samples from each well were found to have concentrations below the detection limit.

76. No concentrations of aldrin (Figure 36) above the detection limit were found in any of the wells during FY87. Thus, the concentrations of aldrin along the control system decreased over the two year period.

Chloride

77. During FY86, the highest concentrations of chloride (Figure 37) were found centered around Well No. 4 in the western half of control system with a maximum concentration of approximately 1000 ppm and a maximum mean concentration of 900 ppm. Chloride concentrations decreased to the west, then increased in the vicinity of Well No. 33 to approximately 600 ppm, and then continued to decrease. East from Well No. 4, the concentrations decreased to approximately 100 ppm before increasing to approximately 300 ppm at the very end of the line of wells.

78. The general shape of the graph for FY87 (Figure 38) is very similar to FY86. The highest concentrations found increased to 1200 ppm in Well No. 4 but the corresponding mean for the year was approximately the same as FY86. The mean concentrations in the vicinity of Well No. 33 increased to approximately 900 ppm. Chloride concentration found along the eastern half of the control system were slightly higher in FY87 than in FY86. In summary, the general distribution of chloride along the control system did not change over the two year period, however, the concentrations associated with various wells increased from a few percent to a maximum of 45 percent for Well No. 33.

Combined Organo-Sulfur

79. Concentrations of the organo-sulfur compounds (Figure 39) above the detection limit were found in FY86 only in the west-central portion of the system in the vicinity of Wells No. 4 thru 8. The maximum concentration was approximately 120 ppb with a maximum mean value of 110 ppb in Well No. 5. The distribution pattern was generally the same for FY87 (Figure 40). Concentrations increased slightly over the two year period with a maximum concentration of 150 ppb and a maximum mean of 120 ppb found in FY87. Also in FY87, several samples collected from Well No. 33 on the west end of the line were found to contain organo-sulfur compounds above the combined detection limit.

DBCP

80. During FY86, the maximum concentrations of DBCP (Figure 41), 7 to 8 ppb, were found associated with Wells No. 7 and 8. The maximum mean concentration was approximately 5 ppb. The DBCP concentrations decreased rapidly to the west and east. Several samples collected from Wells No. 19 and 20 were found to have concentrations near 2 ppb. No concentrations above the detection limit were found in samples collected from the east or west end of the control system.

81. The DBCP distribution (Figure 42) found in FY87 was similar to that found in FY86. The mean concentrations in Wells No. 7 and 8 decreased while the concentration in Well No. 5 increased. The maximum concentration found was 10.5 ppb while the maximum mean decreased to approximately 4 ppb. Concentrations found in wells along the center of the system did not vary significantly over the two year period. In FY87, as in FY86, no concentrations of DBCP above the detection limit were found in samples collected from either end of the control system.

DCPD

82. The highest concentrations of DCPD (Figure 43) found in FY86, 900 ppb, were found in samples collected from Wells No. 4 and 6. The maximum mean concentration of 600 ppb was found in Well No. 4. Concentrations of DCPD above the detection limit were found distributed only in Wells No. 2 thru 8. The shape of DCPD distribution found in FY87 was similar to that found in FY86. The maximum concentration found decreased to 700 ppb while the maximum mean concentration decreased to 400 ppb. The primary DCPD distribution was found between Wells No. 1 and 8 which represented a slight increase in area over FY86.

83. During FY87, (Figure 44) there were a large number of samples collected from the dewatering wells which were found to contain concentrations of DCPD at or just slightly above the detection limit. Only six wells out of 35 produced samples which all contained concentrations below the detection limit. These results are not consistent with the data collected from various monitoring wells around the control system. As a result, the dewatering well data indicating very low concentrations of DCPD, at or near 1 ppb, must be considered suspect. It should be noted that the detection limit for DCPD has been recently increased from 1 ppb to 9.3 ppb.

DIMP

84. During FY86, concentrations of DIMP (Figure 45) above the detection limit were found in samples collected from wells located along the western end of the control system. The maximum concentration of 1600 ppb was found associated with Well No. 2. The maximum mean concentration of 1400 ppb was also associated with this well. DIMP concentrations decreased rapidly to the east and west of Well No. 2. The DIMP distribution (Figure 46) along the control system in FY87 was very similar to FY86. The maximum concentration increased to 1700 ppb while the mean increased to 1500 ppb in the same well. As in FY86, no samples collected from Wells No. 30 and 31 on the west end of the line, and 19 thru 29 on the east end of the line, were found to contain concentrations of DIMP above the detection limit.

Dieldrin

85. In FY86, concentrations of dieldrin (Figure 47) were found in samples collected from dewatering wells starting at Well No. 22 and extending to the west. The maximum concentration of 6 ppb was found associated with Well No. 5. No mean concentrations were calculated for the wells in the immediate area due to a lack of data points meeting the criterion. The maximum mean concentration was 3 ppb associated with Well No. 8. Dieldrin concentrations decreased to the east with mean concentrations of approximately 0.5 ppb found as far east as Wells No. 20 and 21. Mean concentrations in excess of 1 ppb were found associated with Wells No. 33 thru 35 on the west end of the control system.

86. The FY87 dieldrin distribution (Figure 48) is somewhat better defined due to the availability of data to calculate mean concentrations in the area of the highest reported concentrations. The high concentration and highest mean concentration were 13 ppb and 8 ppb, respectively, both associated with

Well No. 4. The mean concentrations associated with the wells to the east of Well No. 8 were similar to those found in FY86. In general, the dieldrin concentrations in the vicinity of Wells No. 1 thru 7 increased somewhat over the two year period.

Endrin

87. During FY86, the maximum concentration of endrin (Figure 49), 4.5 ppb, was found associated with Well No. 6. Endrin concentrations above the detection limit were found in samples collected from most of the wells in the west-central portion of the control system. None of the samples collected from wells on the east or west ends of the system were found to contain endrin at concentrations above the detection limit. The endrin distribution (Figure 50) in FY87 was very similar to FY86. The highest concentration found was 5.5 ppb with a maximum mean concentration of 3 ppb, both associated with Well No. 6. In general, endrin concentrations did not vary significantly over the two year period.

Fluoride

88. The FY86 data indicate the highest fluoride concentrations (Figure 51) were found in samples collected from the east end of the control system. Some of the reported concentrations are in excess of 20 ppm. These data are inconsistent with the concentrations found in adjacent monitoring wells. The fluoride concentration in this area is generally in the range of 1 to 2 ppm. The concentrations reported for the dewatering wells west of Well No. 23 are consistent with the surrounding monitoring well concentrations. The maximum concentration, approximately 8.5 ppm, was found in Well No. 30 on the west end of the control system. The maximum mean concentration was 6.3 ppm. The concentration of fluoride generally decreases along the control system from west to east.

89. In FY87, the same general trend (Figure 52) of decreasing concentration from west to east was found. The maximum concentration and maximum mean were associated with Well No. 1. This is a result of a very high concentration of approximately 15 ppm reported for one sample collected from this well. This value is out of the normal range of concentrations generally found in this area. During FY87, the concentrations found in the dewatering wells along the east end of the system generally ranged from 1 to 2.5 ppm. Overall, the distribution and concentrations of fluoride along the control system did

not change significantly over the two year period if the FY86 data for the easternmost wells is disregarded.

Summary of Data

90. Based on the contaminant concentration data collected for the dewatering wells during FY86 and FY87, it appears that the highest concentrations of contaminants are generally found along the western half of the control system in the area of the original North Boundary System. With the exception of fluoride, the highest concentrations of the various contaminants are found in Wells No. 1 through 9. In general, the contaminant distributions did not change significantly over the two year period. Maximum concentration were found in the area during each sampling period. The graphs indicate some variations in concentration trends over the period. Aldrin, DBCP, and DCPD concentrations tended to decrease; dieldrin, DIMP, chloride, and organo-sulfur concentrations tended to increase; while, endrin and fluoride concentrations tended to remain the same. None of the concentration trends were of a magnitude to indicate any significant changes in the ground-water contamination along the control system.

PART V: CONCLUSIONS AND COMMENTS

91. Based on the evaluation of the data, the following conclusions can be drawn:

- a. The NBS is intercepting essentially all of the alluvial ground water flow moving toward it.
- b. During the FY87 time frame, ground-water flow continues to follow the same patterns described by Thompson et al. (1985). The flow is primarily within the buried stream valley through Sections 23 and 24. Most of the contaminants plumes are associated with this ground-water flow. Based on the data collected from the dewatering wells, the highest concentrations of contaminants are generally found along the western half of the control system in the area of the original NBS. The contaminant distribution do not vary greatly over the two year period. Concentrations of some contaminants increased while other decreased during FY86 and FY87, however, none of the trends were of a significant magnitude.
- c. The treatment system is effectively removing organic contaminants from the influent to the system. The ground water being recharged contains levels of organic contaminants generally below detectable levels. Inorganic contaminants such as chloride and fluoride are not being treated. However, treatment plant influent/effluent are monitored for fluoride and chloride and by proper control of influent streams, the effluent fluoride concentration is maintained below EPA's secondary drinking water standard of 4.0 ppm at all times and the effluent chloride concentrations is, on an average basis, below EPA's secondary drinking water standard of 250.0 ppm.
- d. Ground-water levels upgradient of the NBS during FY87 continue the gradual decline of FY85-86. Precipitation does not significantly affect water levels indicating that the system flow rate of 250 gpm is somewhat exceeding ground-water flow toward the system. Based on lower FY87 ground-water levels upgradient of the NBS, flow toward the system is approximately 230 gpm.
- e. The NBS recharge continues to be less than optimal in achieving the desired distribution of ground water north of the barrier. This condition is reflected in the variability of the ground-water levels immediately north of the system.

COMMENTS

92. The North Boundary Containment/Treatment System Performance Report FY84 (Thompson et. al, Dec 85) and the North Boundary Containment/Treatment System Performance Report FY85/86 (PMRMA, Jun 87) indicated a need to assess system components and the need to improve the distribution of ground water immediately north of the system. In response to the above mentioned reports,

Task 36 was initiated to assess the specific components of the North Boundary System. Improvements to the North Boundary System have been documented under Task 36 (ESE Jun 88) and are discussed in the Proposed Decision Document for the North Boundary Improvements Interim Response Action at the Rocky Mountain Arsenal draft report (PMRMA, Nov 88).

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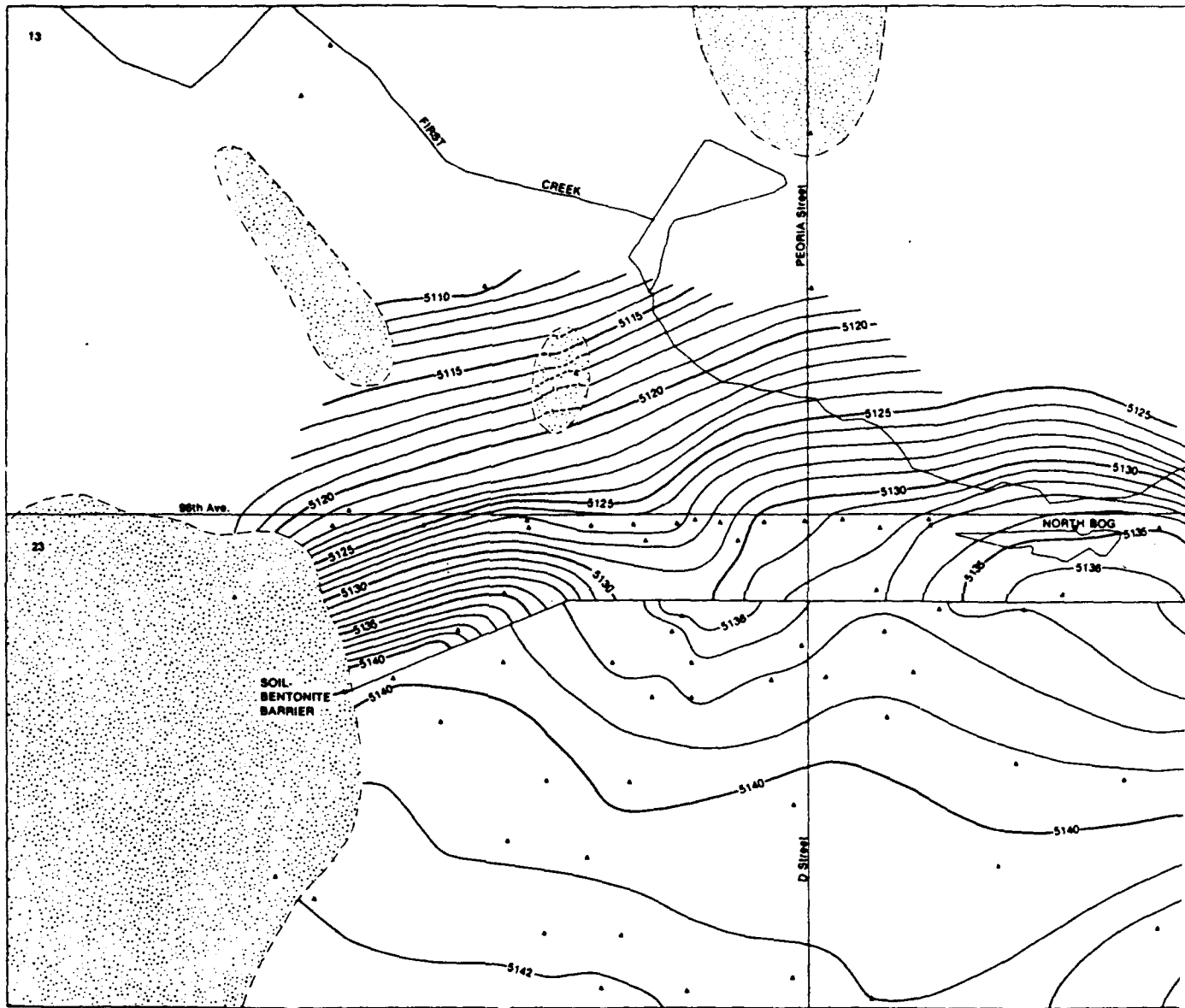
Rocky Mountain Arsenal Contamination Control Program Team, Installation Restoration at Rocky Mountain Arsenal, "Selection of a Contamination Control Strategy for RMA," Volume II, Appendix D, page D-9, Report No. DRXTH-SE-83206, September 1983, U.S. Army Toxic and Hazardous Materials Agency and Rocky Mountain Arsenal. Rocky Mountain Arsenal Information Center Reference Library Number 83326R01, Rocky Mountain Arsenal, Commerce City, Colorado.

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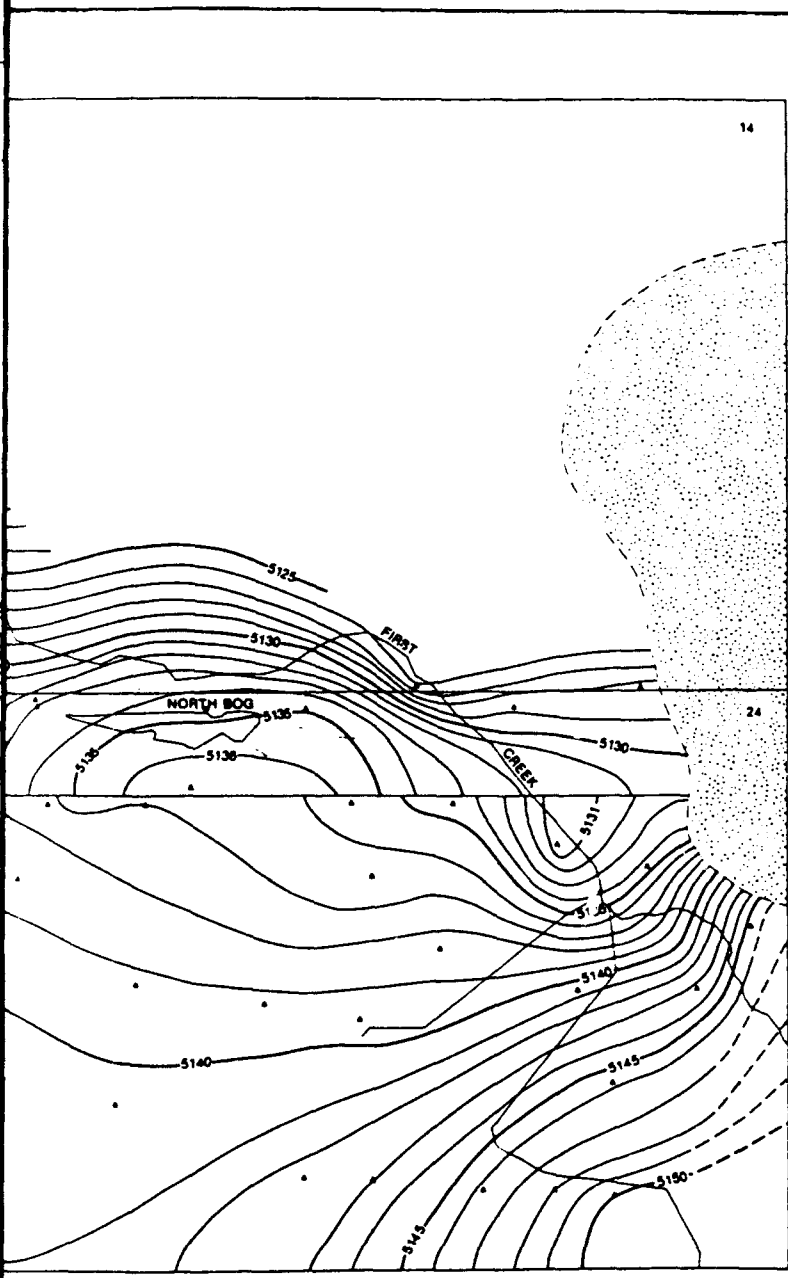
Program Managers Office for Rocky Mountain Arsenal, Rocky Mountain Arsenal, Commerce City, Colorado. November 1988. "Proposed Decision Document for the North Boundary System Improvements Interim Response Action at the Rocky Mountain Arsenal." Rocky Mountain Arsenal, Commerce City, Colorado.

APPENDIX A
GEOLOGIC AND HYDROLOGIC PLATES



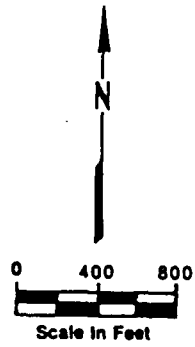
NBCS, WATER TABLE ELEVATION (FEET,MSL)
1ST QUARTER FY87

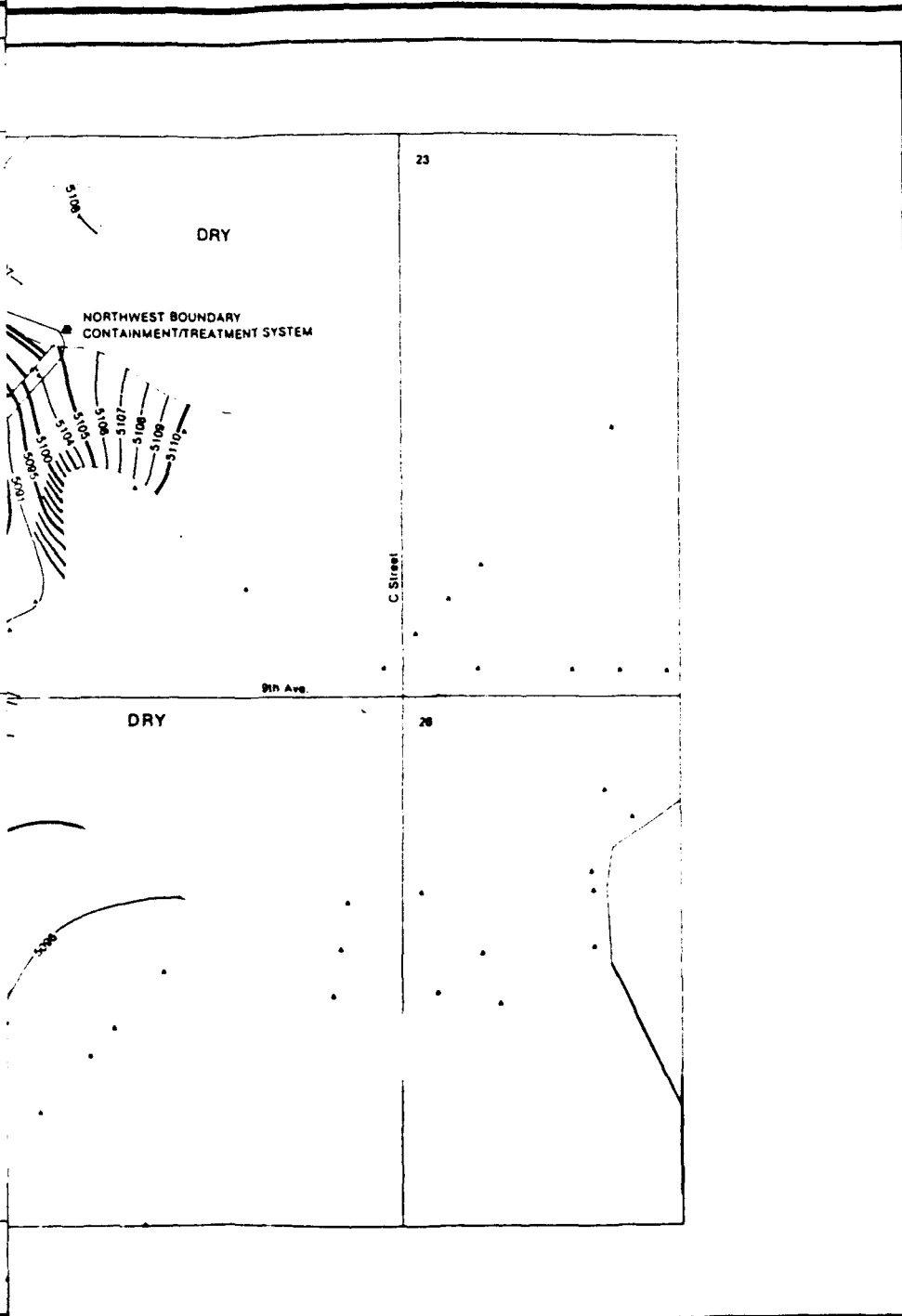
SOURCE:ESE; 1988, TASK 25 DRAFT REPORT VERSION 1.1



EXPLANATION

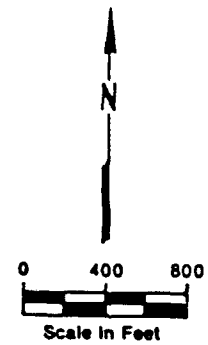
- 5140 — WATER TABLE ELEVATION
CONTOUR INTERVAL
- ▲ ALLUVIAL MONITORING WELL
WATER LEVELS COLLECTED
FALL 1986
- UNSATURATED ALLUVIUM

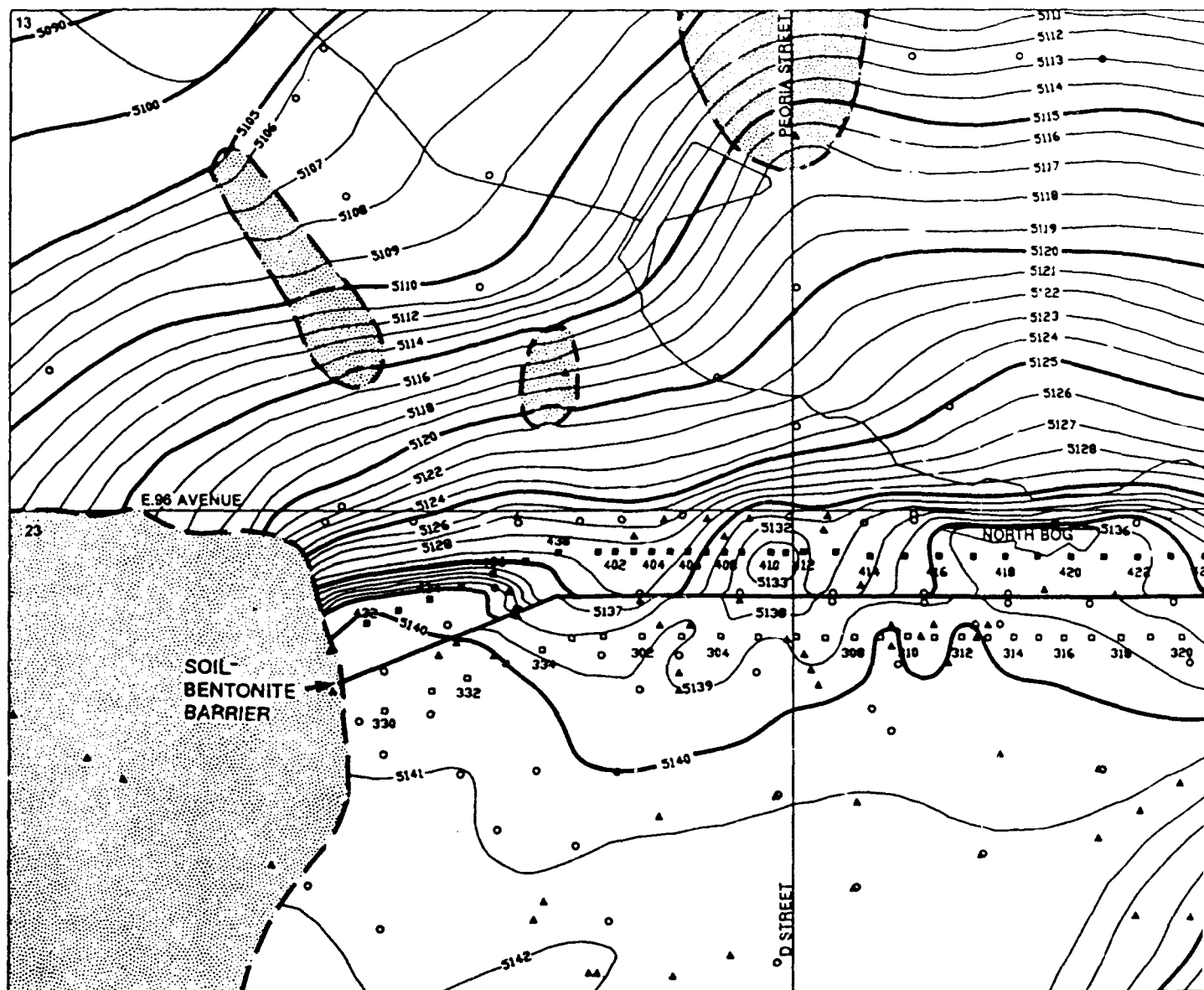




EXPLANATION

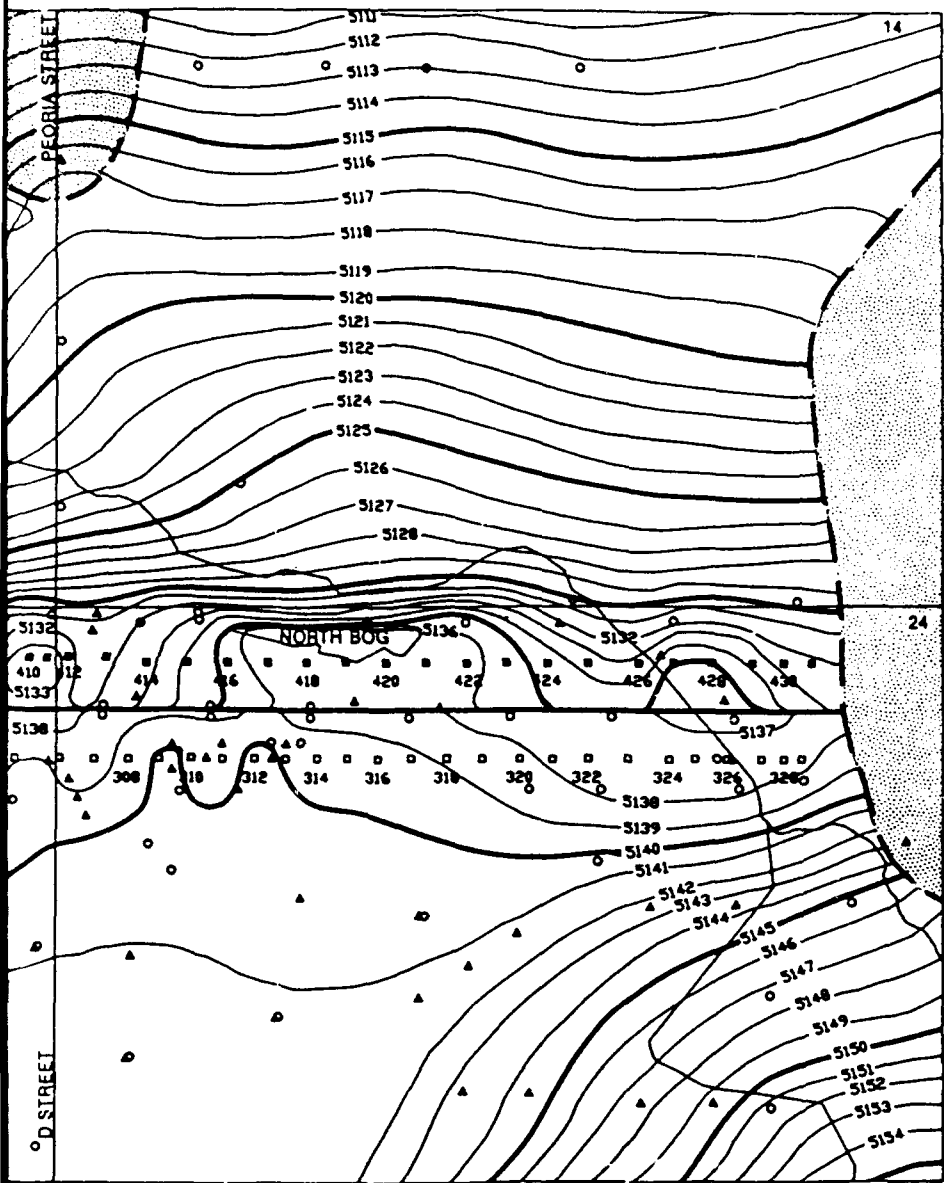
- 5100 — WATER TABLE ELEVATION CONTOUR LINE
 - - - 5100 - - - INFERRED WATER TABLE ELEVATION LINE
 - ▲ ALLUVIAL WELL MONITORED FOR WATER LEVELS
- CONTOUR INTERVAL : 1 FT.





NBCS, WATER TABLE ELEVATION (FEET,MSL)
3RD QUARTER, FY87

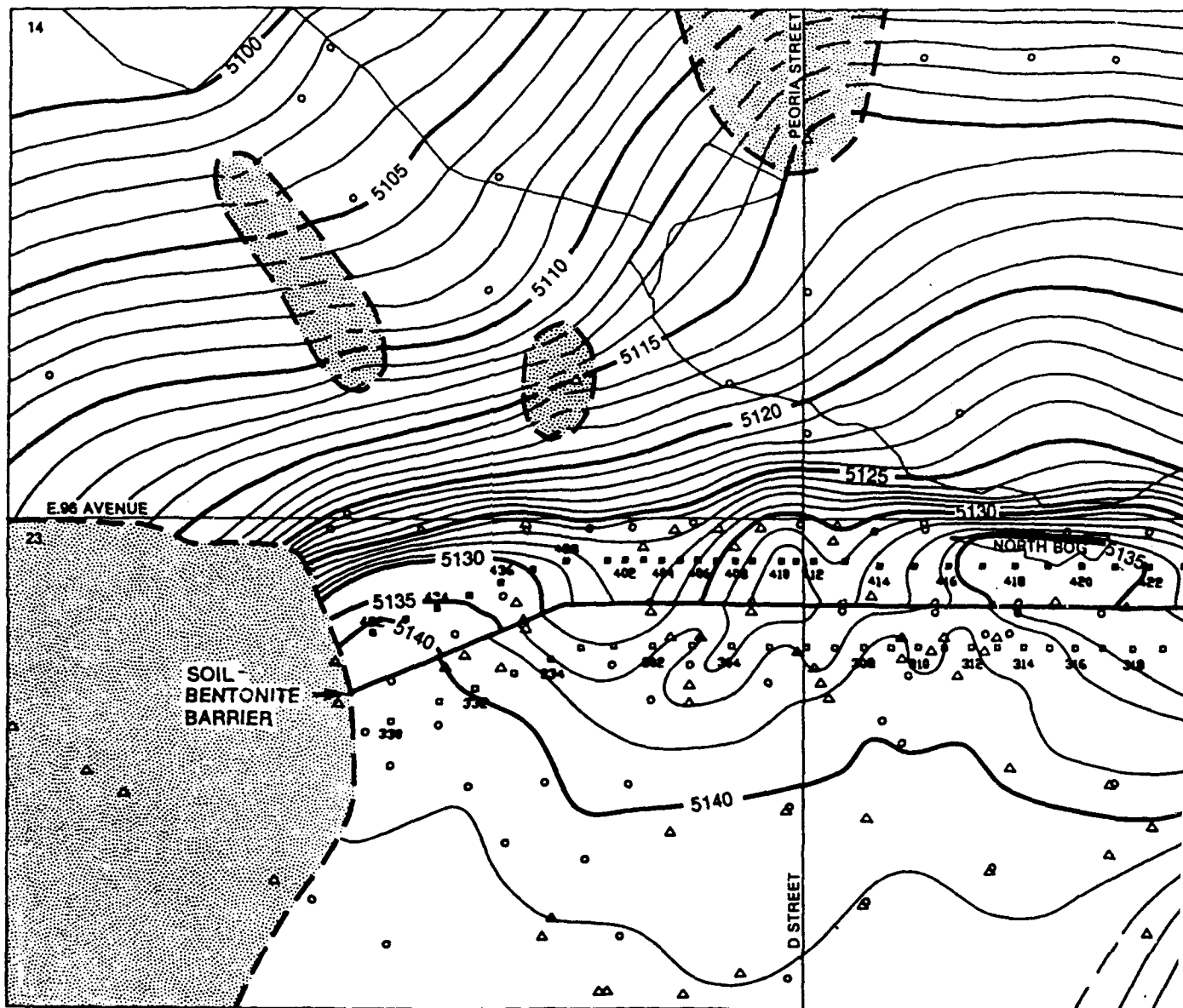
SOURCE:ESE; 1988, TASK 25 DRAFT REPORT VERSION 1.1



EXPLANATION

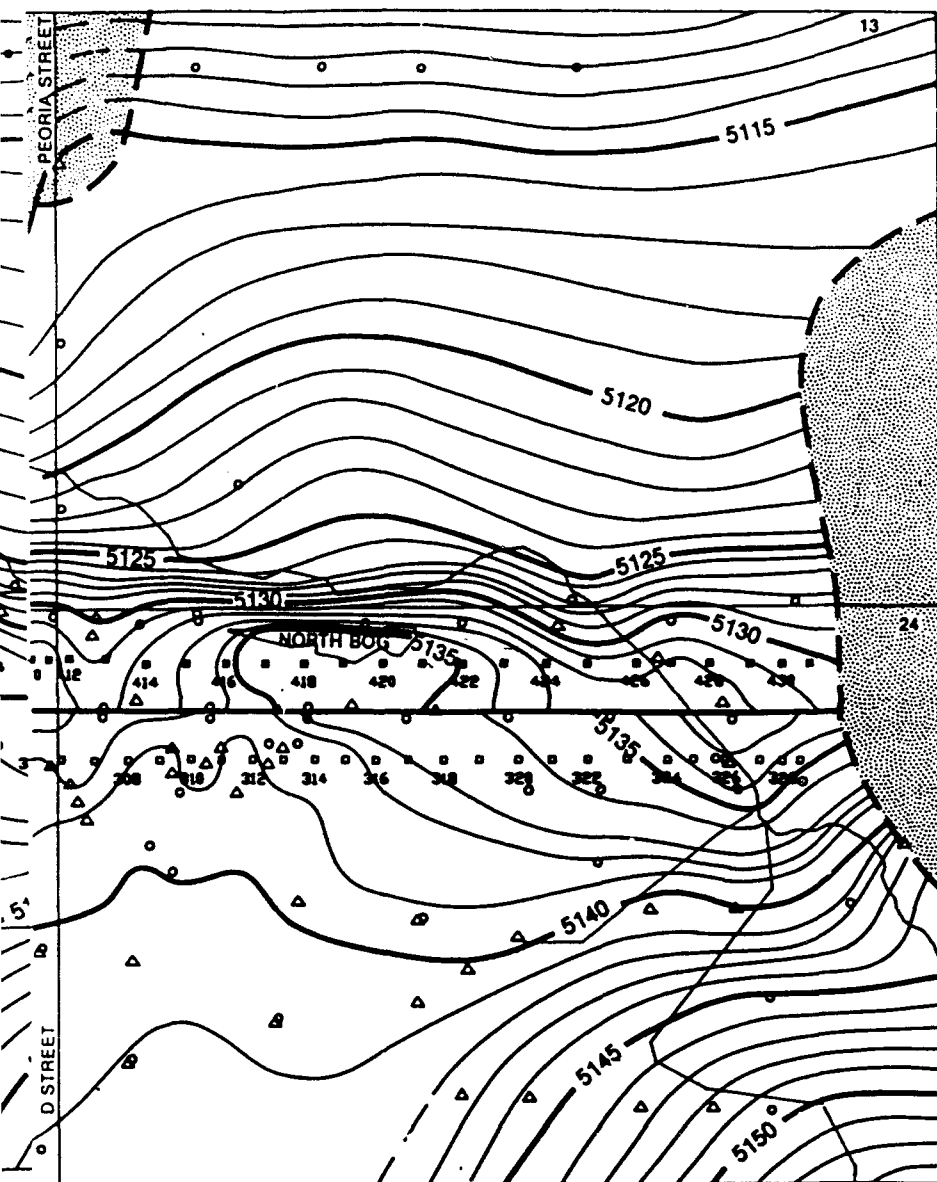
- 5150 WATER LEVEL CONTOUR (MSL)
- DEWATERING WELL
- RECHARGE WELL
- ALLUVIAL WELL SAMPLED FOR WATER QUALITY AND MEASURED FOR WATER LEVELS
- △ ALLUVIAL WELL MEASURED FOR WATER LEVELS ONLY
- } WATER LEVEL MEASURED THIS QUARTER
- ▨ UNSATURATED ALLUVIUM





NBCS, WATER TABLE ELEVATION (FEET,MSL)
4TH QUARTER, FY87

SOURCE:ESE; 1988, TASK 25 DRAFT REPORT VERSION 1.1



EXPLANATION

- 5150 — WATER LEVEL CONTOUR (MSL)
- DEWATERING WELL
- ▣ RECHARGE WELL
- ALLUVIAL WELL SAMPLED FOR WATER QUALITY AND MEASURED FOR WATER LEVELS.
- △ ALLUVIAL WELL MEASURED FOR WATER LEVELS ONLY
- } WATER LEVEL MEASURED THIS QUARTER
- ▣ UNSATURATED ALLUVIUM

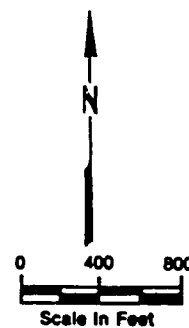
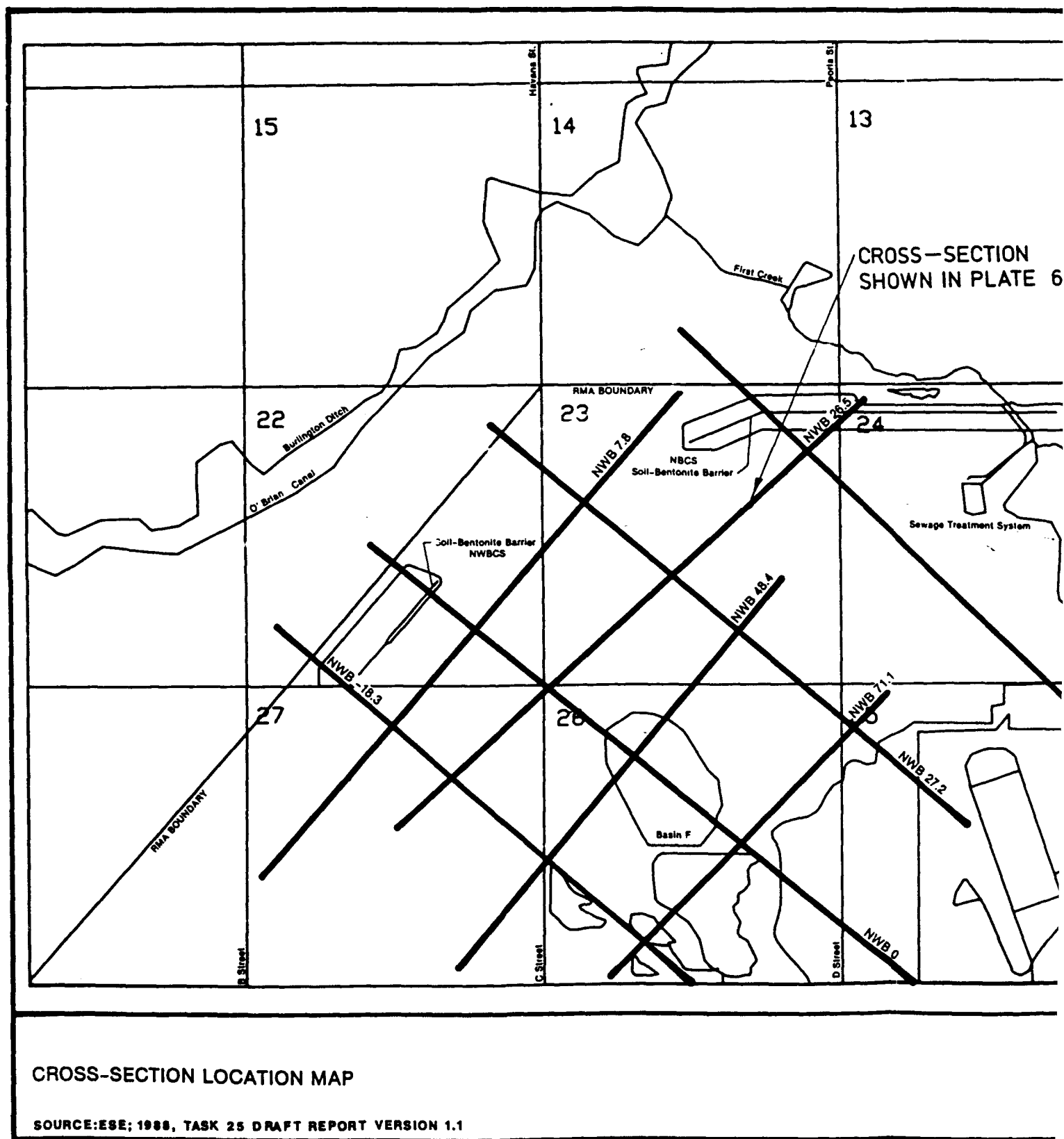
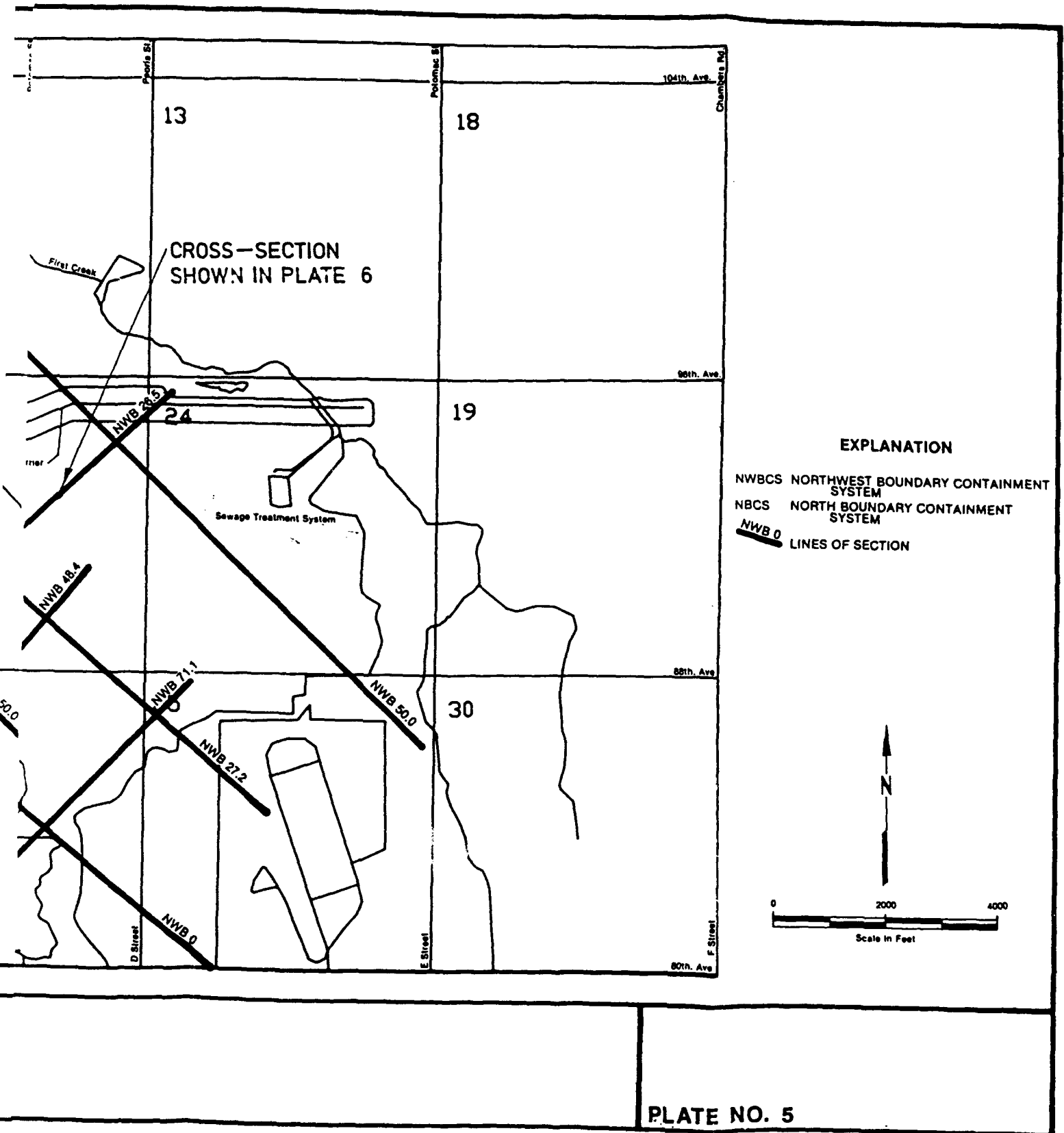


PLATE NO. 4

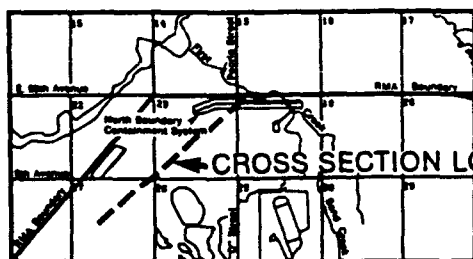
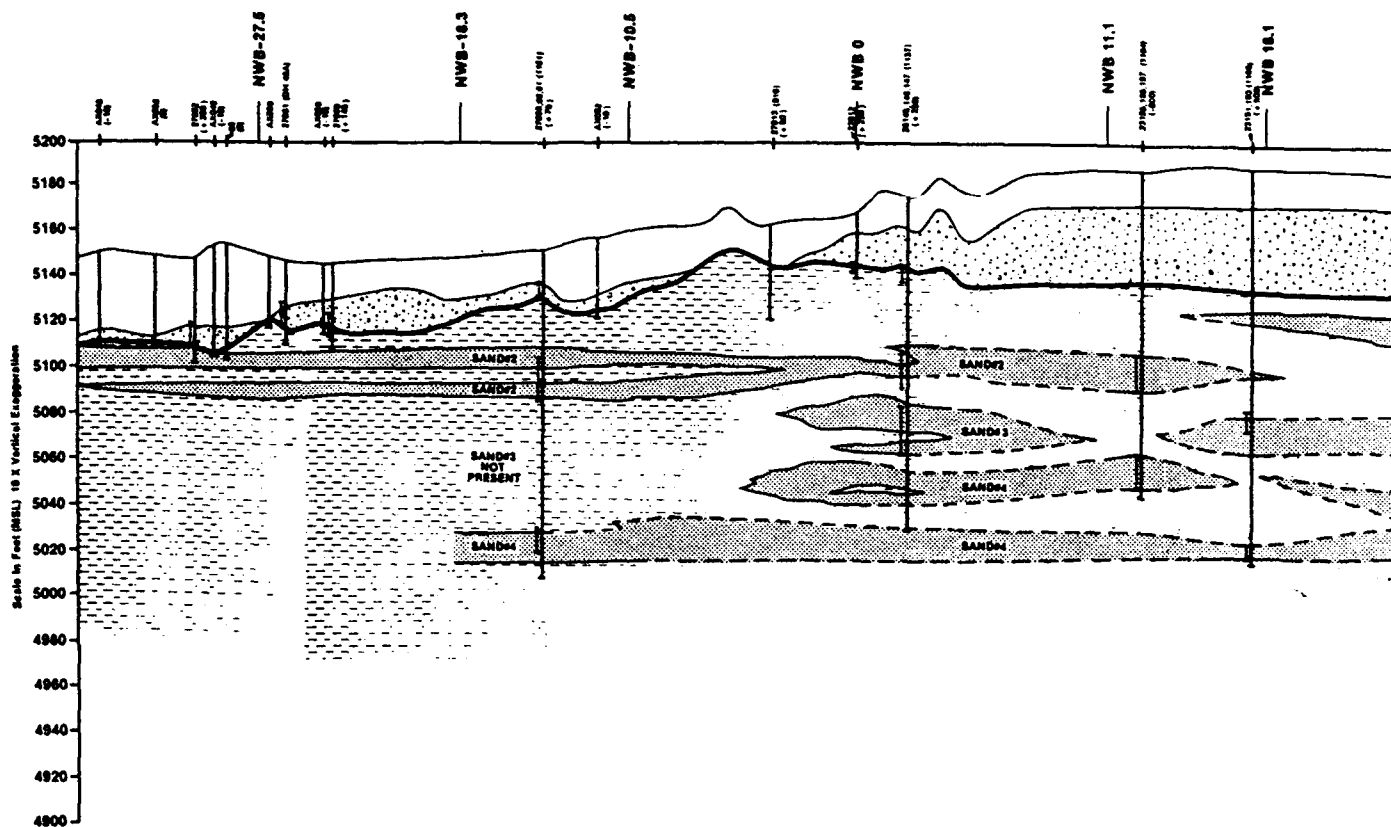


CROSS-SECTION LOCATION MAP

SOURCE: ESE; 1988, TASK 25 DRAFT REPORT VERSION 1.1



**26.5
NW BOUNDARY
LOOKING NW**

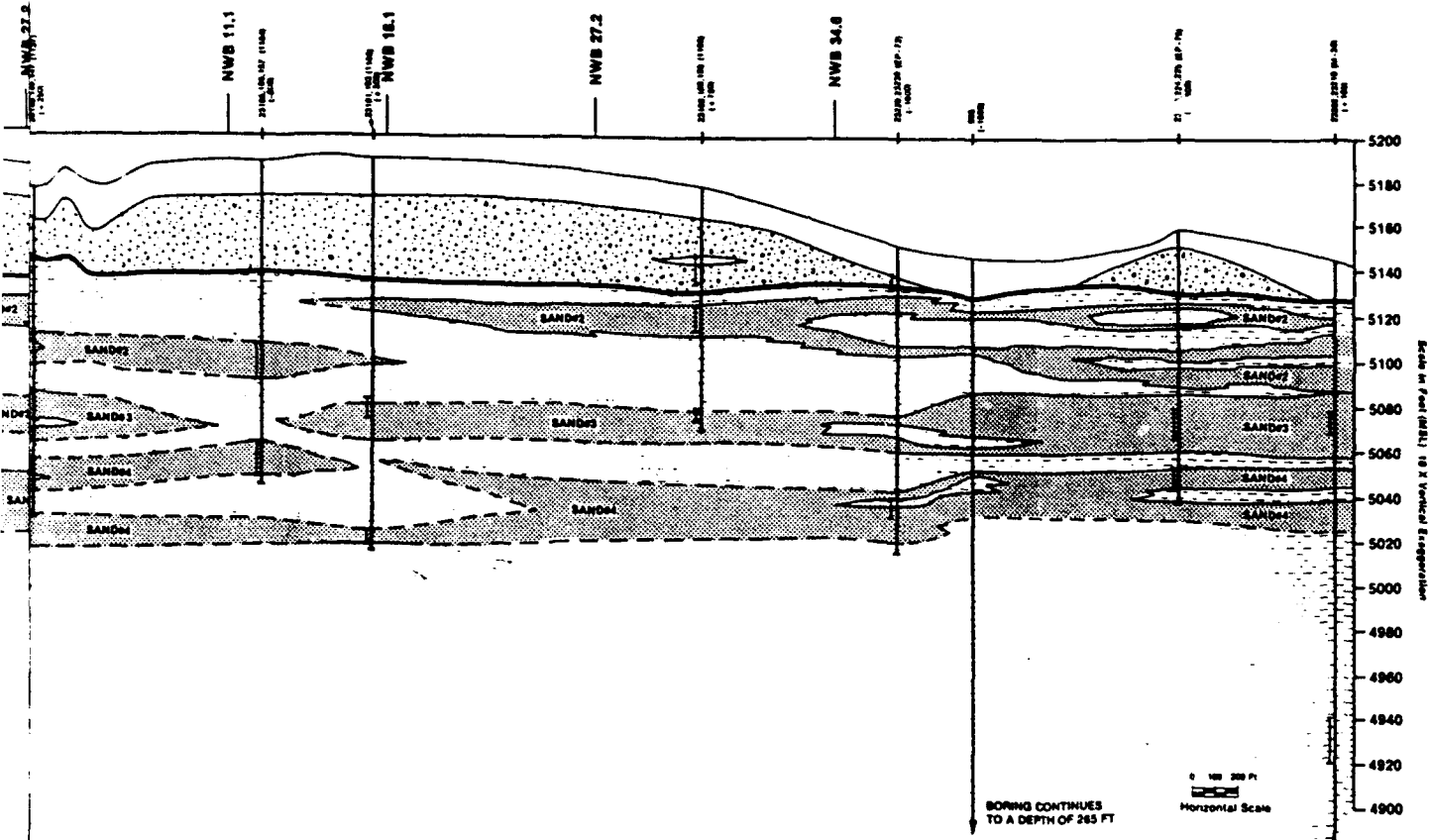


CROSS SECTION LOCATION INDEX MAP

NORTHWEST BOUNDARY CROSS SECTION 26.5

SOURCE: ESE; 1988, TASK 25 DRAFT REPORT VERSION 1.1

**26.5
NW BOUNDARY
LOOKING NW**



EXPLANATION

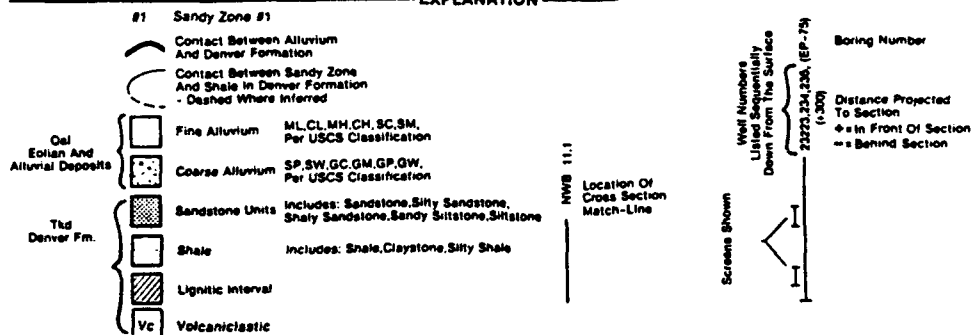
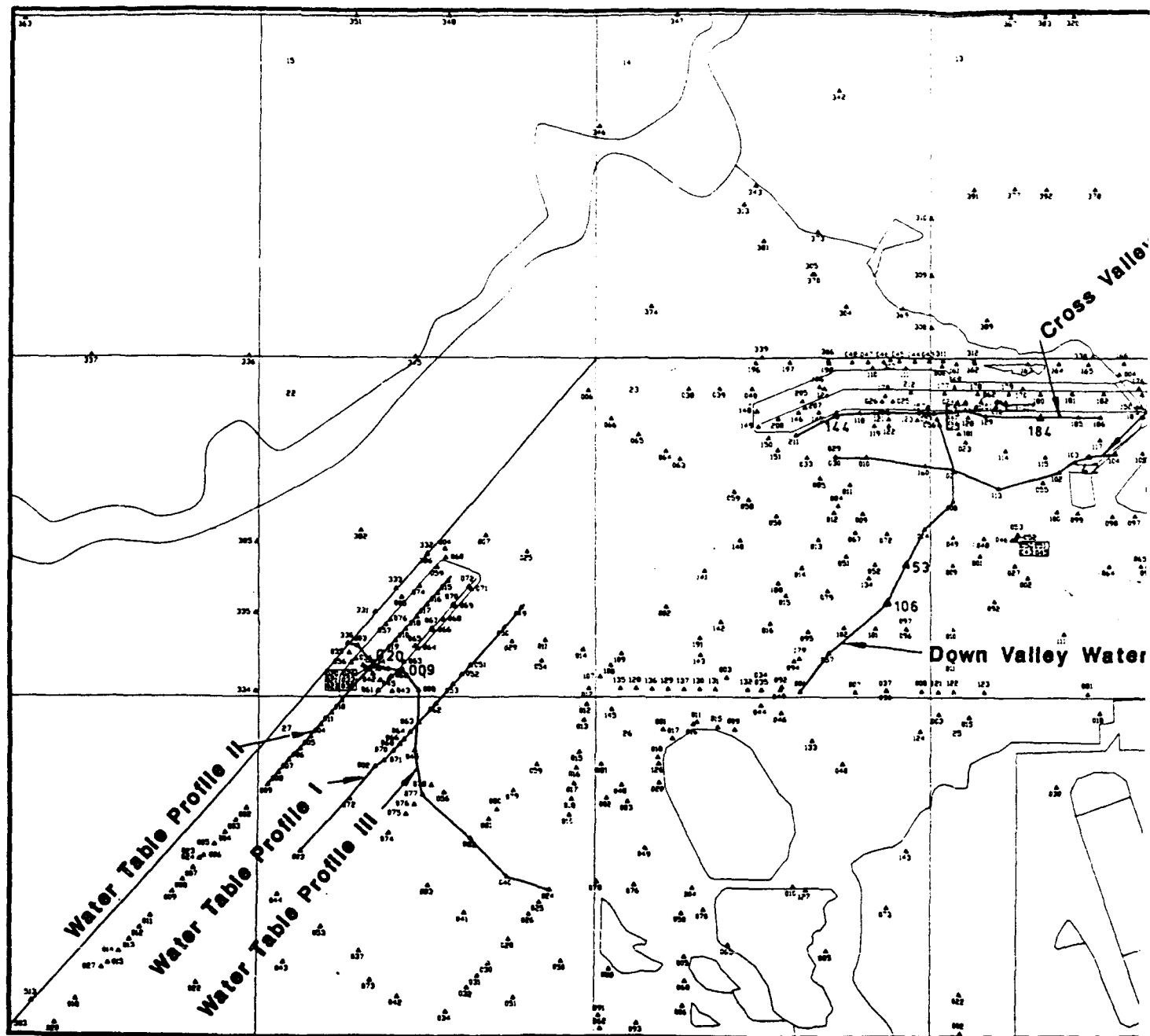
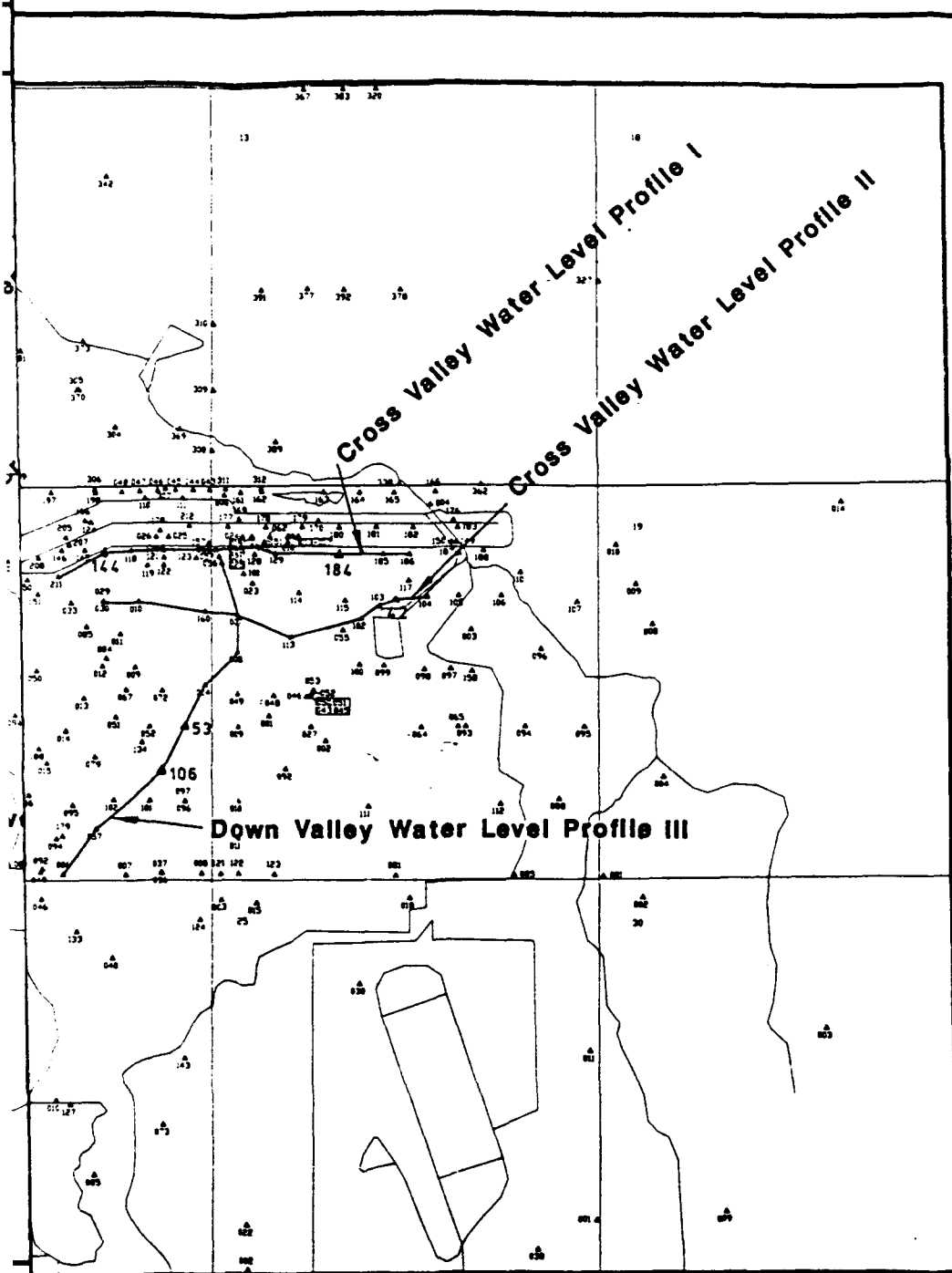


PLATE NO. 6



ALLUVIAL MONITORING WELL AND PROFILE LOCATIONS, WATER LEVEL NETWORK

SOURCE: ESE; 1988, TASK 25 DRAFT REPORT VERSION 1.1



EXPLANATION

△ WELL MONITORED FOR WATER LEVELS

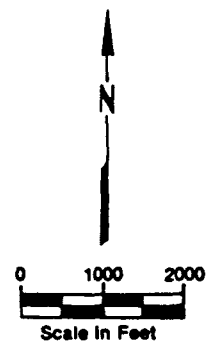


PLATE NO. 7

APPENDIX B

FLOW DATA

R. I. C.

NORTH BOUNDARY TREATMENT PLANT
FY 87 WEEKLY FLOWS FOR ADSORBERS

DATE	----- A -----		----- B -----		----- C -----		----- TOTAL -----	
	GAL(00)	GPM	GAL(00)	GPM	GAL(00)	GPM	GAL(00)	GPM
10/07/86	5311	52.77	9578	95.16	14593	144.99	29482	292.92
10/14/86	4571	45.28	12841	127.20	14561	144.24	31973	316.72
10/21/86	5594	55.66	11162	111.06	14309	142.38	31065	309.10
10/28/86	6150	60.65	11898	117.34	13869	136.78	31917	314.77
11/04/86	6295	62.27	12432	122.97	14532	143.74	33259	328.98
11/11/86	5548	55.20	11107	110.52	14253	141.82	30908	307.54
11/18/86	5981	59.25	12660	125.41	14163	140.30	32804	324.96
11/25/86	5187	51.48	12299	122.07	13406	133.06	30892	306.61
12/02/86	5759	57.02	10610	105.05	14148	140.08	30517	302.15
12/09/86	5700	56.63	11320	112.47	14269	141.77	31289	310.87
12/16/86	5767	57.24	12143	120.53	14985	148.73	32895	326.50
12/23/86	4688	46.48	7849	77.83	11681	115.83	24218	240.14
12/30/86	4812	47.53	9678	95.59	14508	143.29	28998	286.41
01/06/87	4935	49.20	12015	119.79	14718	146.74	31668	315.73
01/13/87	4943	49.09	10851	107.76	13946	138.49	29740	295.34
01/20/87	4668	46.17	9529	94.25	14683	145.23	28880	285.65
01/27/87	5087	50.62	9697	96.49	15129	150.54	29913	297.65
02/03/87	4740	46.93	11315	112.03	14343	142.01	30398	300.97
02/10/87	2488	24.69	5667	56.25	9153	90.85	17308	171.79
02/17/87	2843	28.25	6451	64.09	10389	103.22	19683	195.56
02/24/87	3407	33.77	5532	54.83	11154	110.55	20093	199.15
03/03/87	3625	36.00	5301	52.64	10579	105.05	19505	193.69
03/10/87	3367	33.34	5645	55.89	12050	119.31	21062	208.54
03/17/87	3505	34.81	5540	55.01	10792	107.17	19837	196.99
03/24/87	2605	25.83	4598	45.59	12909	128.00	20112	199.42
03/31/87	3509	34.83	2947	29.25	12244	121.53	18700	185.61
04/07/87	3848	38.41	4663	46.54	11317	112.94	19828	197.89
04/14/87	3726	36.96	4571	45.35	13061	129.57	21358	211.88
04/21/87	3534	35.04	4796	47.56	9861	97.78	18191	180.38
04/28/87	3599	35.74	7592	75.39	11735	116.53	22926	227.66
05/05/87	3423	33.94	7236	71.75	12339	122.35	22998	228.04
05/12/87	4281	42.47	7089	70.33	11994	118.99	23364	231.79
05/19/87	5863	58.16	4815	47.77	10640	105.56	21318	211.49
05/26/87	4730	46.92	8997	89.26	9848	97.70	23575	233.88
06/02/87	4254	42.22	8646	85.82	11400	113.15	24300	241.19
06/09/87	4683	46.41	9968	98.79	10209	101.18	24860	246.38
06/16/87	3361	33.34	5481	54.38	6745	66.91	15587	154.63
06/23/87	4178	41.51	6672	66.29	6987	69.42	17837	177.22
06/30/87	4732	46.81	8053	79.65	9114	90.15	21899	216.61
07/07/87	3146	31.21	8820	87.50	9549	94.73	21515	213.44
07/14/87	2081	20.64	6718	66.65	5917	58.69	14716	145.98
07/21/87	3064	30.49	9390	93.43	9493	94.46	21947	218.38
07/28/87	4613	45.72	9874	97.86	11864	117.58	26351	261.16

R.I.C.

NORTH BOUNDARY TREATMENT PLANT
FY 87 WEEKLY FLOWS FOR ADSORBERS

DATE	----- A ----- GAL(00) GPM	----- B ----- GAL(00) GPM	----- C ----- GAL(00) GPM	----- TOTAL ----- GAL(00) GPM
08/04/87	8061 79.97	4822 47.84	11026 109.38	23909 237.19
08/11/87	5487 54.46	9332 92.63	10420 103.42	25239 250.51
08/19/87	9103 90.35	11706 116.19	10893 108.12	31702 314.66
08/25/87	8434 83.55	11206 111.01	9726 96.34	29366 290.90
09/01/87	9605 95.29	11708 116.15	9807 97.29	31120 308.73
09/08/87	7790 77.17	12210 120.95	11903 117.91	31903 316.03
09/15/87	5269 52.40	8569 85.22	7644 76.02	21482 213.64
09/22/87	3662 36.33	6311 62.61	5195 51.54	15168 150.48
09/30/87	9095 78.88	10347 89.74	11720 101.65	31162 270.27

R.I.C.

NORTH BOUNDARY TREATMENT PLANT
FY 87 QUARTERLY FLOWS FOR ADSORBERS

DATE	----- A -----		----- B -----		----- C -----		----- TOTAL -----	
	GAL(00)	GPM	GAL(00)	GPM	GAL(00)	GPM	GAL(00)	GPM
1st QTR	71363	54.42	145577	111.02	183277	139.77	400217	305.21
2nd QTR	49722	37.96	95088	72.61	162089	123.75	306899	234.31
3rd QTR	54212	41.38	88579	67.61	135250	103.25	278041	212.23
4th QTR	79410	59.73	121013	91.37	125157	94.39	325580	245.49
ANNUAL	254707	48.37	450257	85.65	605773	115.29	1310737	249.31

APPENDIX C
TREATMENT PLANT WATER QUALITY DATA

NORTH BOUNDARY TREATMENT PLANT - ADSORBER A FOR FY87

INFLUENT

SAMPLE DATE	ORG.	C6H6 ug/l	CCL4 ug/l	CH2CL2 ug/l	CHCL3 ug/l	CHLORIDE mg/l	CLC6H5 ug/l	CLDAN ug/l	CPMS ug/l	CPMSO ug/l
10/01/86 RM		....	20.000	....	....	667.000	....	....	LT 20.000	28.400
10/08/86 RM		....	LT 1.000	....	LT 1.000	433.000	....	....	LT 20.000	LT 20.000
10/15/86 RM		....	9.000	....	100.000	687.000	....	....	LT 20.000	33.400
10/22/86 RM		....	9.000	....	80.000	605.000	....	....	LT 20.000	24.500
10/29/86 RM		....	5.000	....	40.000	645.000	....	....	LT 20.000	LT 20.000
11/05/86 RM		....	LT 1.000	....	LT 1.000	474.000	....	....	LT 20.000	LT 20.000
11/12/86 RM		....	7.000	....	80.000	601.000	....	....	LT 20.000	LT 20.000
11/19/86 RM		....	5.000	....	30.000	591.000	....	....	LT 20.000	LT 20.000
11/26/86 RM		....	4.000	....	40.000	605.000	....	....	LT 20.000	LT 20.000
12/03/86 RM		....	....	....	....	586.000	....	....	LT 20.000	LT 20.000
12/10/86 RM		....	....	....	....	581.000	....	....	LT 20.000	LT 20.000
12/17/86 RM		....	....	....	....	580.000	....	....	LT 20.000	LT 20.000
12/31/86 RM		....	....	....	....	671.000	....	....	LT 20.000	22.700
01/07/87 RM		....	....	....	....	485.000	....	....	LT 20.000	LT 20.000
01/14/87 RM		....	LT 1.000	....	10.000	665.000	....	....	LT 20.000	LT 20.000
01/21/87 RM		....	LT 1.000	....	LT 1.000	621.000	....	....	LT 20.000	LT 20.000
01/28/87 RM		....	LT 1.000	....	8.000	564.000	....	....	LT 20.000	LT 20.000
02/04/87 RM		....	LT 1.000	....	8.000	641.000	....	....	LT 20.000	LT 20.000
02/11/87 RM		....	LT 1.000	....	LT 1.000	574.000	....	....	LT 20.000	LT 20.000
02/18/87 RM		....	LT 1.000	....	LT 1.000	664.000	....	....	LT 20.000	20.500
02/25/87 RM		....	LT 1.000	....	LT 1.000	674.000	....	....	LT 20.000	20.000
03/04/87 RM		....	LT 1.000	....	LT 1.000	651.000	....	....	LT 20.000	LT 20.000
03/11/87 RM		....	LT 1.000	....	LT 1.000	299.000	....	....	LT 20.000	LT 20.000
3/18/87 RM		....	LT 1.000	....	20.000	766.000	....	....	LT 20.000	28.500
03/25/87 RM		....	70.000	....	LT 1.000	496.000	....	....	LT 20.000	LT 20.000
04/01/87 RM		....	LT 1.000	....	10.000	590.000	....	....	LT 20.000	LT 20.000
04/08/87 RM		....	LT 1.000	....	8.000	567.000	....	....	LT 20.000	LT 20.000
04/14/87 RM		....	100.000	....	10.000	754.000	....	....	LT 20.000	LT 20.000
04/22/87 RM		....	100.000	....	9.000	680.000	....	....	LT 20.000	23.000
04/29/87 RM		....	100.000	....	8.000	664.000	....	....	LT 20.000	LT 20.000
05/06/87 RM		....	LT 1.000	....	6.000	680.000	....	....	LT 20.000	LT 20.000
05/13/87 RM		....	100.000	....	7.000	699.000	....	....	LT 20.000	21.900
05/27/87 RM		....	90.000	....	8.000	600.000	....	....	LT 20.000	LT 20.000
06/03/87 RM		....	LT 1.000	....	5.000	730.000	....	....	LT 20.000	20.100
06/10/87 RM		....	100.000	....	20.000	700.000	....	....	LT 20.000	LT 20.000
06/17/87 RM		....	100.000	....	20.000	800.000	....	....	LT 20.000	LT 20.000
07/01/87 RM		....	LT 1.000	....	6.000	619.000	....	....	LT 20.000	22.200
07/08/87 RM		....	LT 1.000	....	10.000	700.000	....	....	LT 20.000	LT 20.000
07/15/87 RM		....	100.000	....	20.000	773.000	....	....	LT 20.000	LT 20.000
07/22/87 RM		....	100.000	....	20.000	581.000	....	....	LT 20.000	LT 20.000
07/29/87 RM		....	90.000	....	10.000	860.000	....	....	LT 20.000	22.900
08/05/87 ES	LT 1.920	LT 1.690	LT 2.480	22.500	130.000	LT 1.360	LT 0.152	2.600	18.500	
08/12/87 ES	....	....	....	....	....	....	....	....	....	....
08/19/87 ES	....	....	....	....	784.000	....	LT 0.152	....	....	....
08/26/87 ES	....	....	....	....	772.000	....	LT 0.152	....	....	....
09/02/87 ES	LT 1.920	LT 1.690	LT 2.480	14.200	835.000	LT 1.360	LT 0.152	6.150	28.500	
09/09/87 ES	....	....	....	....	717.000	....	LT 0.152	....	....	....
09/23/87 ES	....	....	....	....	754.000	....	....	....	....	....
09/30/87 ES	LT 1.920	LT 1.690	LT 2.480	5.550	534.000	LT 1.360	LT 0.152	4.380	21.600	

LT = LESS THAN The Following Concentration

ug/l = MICROGRAM PER LITER

.... INDICATES THAT ANALYSIS WAS NOT PERFORMED

mg/l = MILLIGRAM PER LITER

NORTH BOUNDARY TREATMENT PLANT - ADSORBER A FOR FY87

INFLUENT

SAMPLE DATE	ORG.	111TCE ug/l	112TCE ug/l	11DCE ug/l	11DCLE ug/l	12DCE ug/l	12DCLE ug/l	ALDRN ug/l	AS ug/l	B ug/l
10/01/86	RM	....	....	....	....	....	20.000	LT 0.200	....	....
10/08/86	RM	....	....	....	....	....	10.000	LT 0.200	....	....
10/15/86	RM	....	....	....	....	....	20.000	LT 0.200	....	....
10/22/86	RM	....	....	....	....	....	10.000	LT 0.200	....	....
10/29/86	RM	....	....	....	....	....	10.000	LT 0.200	....	....
11/05/86	RM	....	....	....	....	....	10.000	LT 0.200	....	....
11/12/86	RM	....	....	....	....	....	10.000	LT 0.200	....	....
11/19/86	RM	....	....	....	....	....	6.000	LT 0.200	....	....
11/26/86	RM	....	....	....	....	....	....	LT 0.200	....	....
12/03/86	RM	....	....	....	....	....	....	LT 0.200	....	....
12/10/86	RM	....	....	....	....	....	....	LT 0.200	....	....
12/17/86	RM	....	....	....	....	....	....	LT 0.200	....	....
12/31/86	RM	....	....	....	....	....	....	LT 0.200	....	....
01/07/87	RM	....	....	....	....	....	....	LT 0.200	....	....
01/14/87	RM	....	....	....	....	....	20.000	LT 0.200	....	....
01/21/87	RM	....	....	....	....	....	20.000	LT 0.200	....	....
01/28/87	RM	....	....	....	....	....	8.000	LT 0.200	....	....
02/04/87	RM	....	....	....	....	....	30.000	LT 0.200	....	....
02/11/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
02/18/87	RM	....	....	....	....	....	20.000	LT 0.200	....	....
02/25/87	RM	....	....	....	....	....	20.000	LT 0.200	....	....
03/04/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
03/11/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
03/18/87	RM	....	....	....	....	7.000	4.000	LT 0.200	....	....
03/25/87	RM	....	....	....	....	2.000	LT 1.000	LT 0.200	....	....
04/01/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/08/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/14/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/22/87	RM	....	....	....	....	2.000	LT 1.000	LT 0.200	....	....
04/29/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
05/06/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
05/13/87	RM	....	....	....	....	3.000	LT 1.000	LT 0.200	....	....
05/27/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
06/03/87	RM	....	....	....	....	3.000	6.000	LT 0.200	....	....
06/10/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
06/17/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/01/87	RM	....	....	....	....	LT 1.000	5.000	LT 0.200	....	....
07/08/87	RM	....	....	....	....	LT 1.000	8.000	LT 0.200	....	....
07/15/87	RM	....	....	....	....	LT 1.000	3.000	LT 0.200	....	....
07/22/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/29/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
08/05/87	ES	LT 1.090	LT 1.630	LT 1.850	LT 1.930	....	LT 2.070	LT 0.083	LT 2.500	LT 1.100
08/12/87	ES	....	....	....	....	....	....	....	....	....
08/19/87	ES	....	....	....	....	....	....	LT 0.083	....	....
08/26/87	ES	....	....	....	....	....	....	LT 0.083	....	....
09/02/87	ES	LT 1.090	LT 1.630	LT 1.850	LT 1.930	....	60.100	LT 0.083	LT 2.500	LT 1.100
09/09/87	ES	LT 0.083
09/23/87	ES
09/30/87	ES	LT 1.090	LT 1.630	LT 1.850	LT 1.930	2.900	LT 0.083	5.090	1.300

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mg/l = MILLIGRAM PER LITER

NORTH BOUNDARY TREATMENT PLANT - ADSORBER A FOR FY87

INFLUENT

SAMPLE DATE	CPMSO2 ORG. ug/l	D8CP ug/l	DCPD ug/l	DIMP ug/l	DITH ug/l	DLDRN ug/l	DMDS ug/l	DMMP ug/l	ENDRN ug/l
10/01/86 RM	31.000	1.100	300.000	579.000	LT 20.000	2.940	....	....	0.850
10/08/86 RM LT	20.000	0.700	200.000	300.000	LT 20.000	LT 0.200	....	....	LT 0.200
10/15/86 RM	31.800	1.440	400.000	589.000	LT 20.000	3.450	....	....	LT 0.200
10/22/86 RM	24.900	0.900	200.000	583.000	LT 20.000	2.170	....	....	1.020
10/29/86 RM LT	20.000	1.060	200.000	468.000	LT 20.000	1.960	....	....	LT 0.200
11/05/86 RM LT	20.000	0.600	300.000	452.000	LT 20.000	0.780	....	....	0.240
11/12/86 RM	20.800	0.830	300.000	511.000	LT 20.000	2.490	....	....	1.040
11/19/86 RM LT	20.000	0.740	200.000	570.000	LT 20.000	2.070	....	....	0.880
11/26/86 RM	21.300	0.470	200.000	523.000	LT 20.000	2.080	....	....	0.770
12/03/86 RM	21.200	0.920	....	533.000	LT 20.000	3.630	....	....	1.040
12/10/86 RM	22.200	0.920	....	583.000	LT 20.000	2.950	....	....	1.260
12/17/86 RM LT	20.000	0.730	....	545.000	LT 20.000	1.730	....	....	LT 0.200
12/31/86 RM	24.800	0.830	....	643.000	LT 20.000	2.050	....	....	0.760
01/07/87 RM LT	20.000	0.620	....	405.000	LT 20.000	0.570	....	....	0.230
01/14/87 RM LT	20.000	0.490	300.000	479.000	LT 20.000	1.700	....	....	LT 0.200
01/21/87 RM	21.500	0.620	400.000	539.000	LT 20.000	0.830	....	....	LT 0.200
01/28/87 RM LT	20.000	0.600	300.000	517.000	LT 20.000	0.600	....	....	LT 0.200
02/04/87 RM	20.300	0.670	300.000	607.000	LT 20.000	1.770	....	....	0.780
02/11/87 RM LT	20.000	LT 0.200	10.000	321.000	LT 20.000	LT 0.200	....	....	LT 0.200
02/18/87 RM	26.000	0.960	400.000	788.000	LT 20.000	1.640	....	....	0.600
02/25/87 RM	30.000	0.720	400.000	734.000	LT 20.000	2.260	....	....	0.640
03/04/87 RM	23.700	0.660	300.000	823.000	LT 20.000	1.120	....	....	0.360
03/11/87 RM LT	20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
3/18/87 RM	30.100	0.980	500.000	688.000	LT 20.000	1.980	....	....	0.690
3/25/87 RM LT	20.000	0.380	100.000	397.000	LT 20.000	0.410	....	....	LT 0.200
04/01/87 RM	20.800	0.590	100.000	714.000	LT 20.000	1.850	....	....	LT 0.200
04/08/87 RM LT	20.000	0.560	100.000	578.000	LT 20.000	1.230	....	....	0.490
04/14/87 RM	20.500	0.750	100.000	643.000	LT 20.000	1.780	....	....	1.140
04/22/87 RM	27.700	0.520	100.000	737.000	LT 20.000	1.850	....	....	1.250
04/29/87 RM	20.400	0.650	100.000	763.000	LT 20.000	1.870	....	....	1.390
05/06/87 RM	20.700	1.710	100.000	743.000	LT 20.000	2.080	....	....	1.200
05/13/87 RM	21.000	0.670	100.000	617.000	LT 20.000	2.200	....	....	1.100
05/27/87 RM LT	20.000	0.450	100.000	483.000	LT 20.000	0.970	....	....	0.580
06/03/87 RM	24.000	0.590	200.000	700.000	20.300	1.990	....	....	LT 0.200
06/10/87 RM	20.800	0.490	100.000	622.000	20.200	2.490	....	....	LT 0.200
06/17/87 RM LT	20.000	1.050	200.000	627.000	LT 20.000	2.550	....	....	LT 0.200
07/01/87 RM LT	20.000	0.800	100.000	490.000	LT 20.000	1.820	....	....	LT 0.200
07/08/87 RM LT	20.000	0.410	100.000	727.000	LT 20.000	0.550	....	....	LT 0.200
07/15/87 RM LT	20.000	0.820	100.000	734.000	LT 20.000	1.420	....	....	LT 0.200
07/22/87 RM LT	20.000	0.490	100.000	482.000	LT 20.000	1.510	....	....	LT 0.200
07/29/87 RM	25.100	0.920	100.000	720.000	LT 20.000	2.030	....	....	LT 0.200
08/05/87 ES	4.940	0.863	21.000	158.000	LT 3.340	0.804	LT 1.160	LT 16.300	0.833
08/12/87 ES	....	....	....	1300.000	....	....	....	LT 16.300	....
08/19/87 ES	....	1.030	362.000	....	....	4.370	....	LT 16.300	2.630
08/26/87 ES	....	1.080	268.000	1030.000	....	2.350	....	LT 16.300	2.670
09/02/87 ES	39.700	1.010	....	1350.000	26.100	LT 0.054	LT 1.160	LT 16.300	LT 0.060
09/09/87 ES	....	1.050	342.000	1220.000	....	1.630	....	LT 16.300	LT 0.060
09/23/87 ES	....	1.060	47.600	1330.000	....	....	....	....	....
09/30/87 ES	33.000	0.765	256.000	988.000	22.200	1.720	LT 1.160	....	0.706

LT = LESS THAN The Following Concentration

.... INDICATES THAT ANALYSIS WAS NOT PERFORMED

ug/l = MICROGRAM PER LITER

mg/l = MILLIGRAM PER LITER

NORTH BOUNDARY TREATMENT PLANT - ADSORBER A FOR FY87

INFLUENT

SAMPLE DATE	ORG.	ETC6H5 ug/l	FLUORIDE mg/l	HCCPD ug/l	ISODR ug/l	MEC6H5 ug/l	MIBK ug/l	M-XYLENE ug/l	OXAT ug/l	O,P-X. ug/l
10/01/86	RM	....	4.700	....	LT 0.200	....	....	....	LT 20.000	....
10/08/86	RM	....	3.460	....	LT 0.200	....	....	....	LT 20.000	....
10/15/86	RM	....	4.000	....	0.340	....	....	....	LT 20.000	....
10/22/86	RM	....	4.190	....	LT 0.200	....	....	....	LT 20.000	....
10/29/86	RM	....	4.000	....	LT 0.200	....	....	....	LT 20.000	....
11/05/86	RM	....	3.630	....	LT 0.200	....	....	....	LT 20.000	....
11/12/86	RM	....	4.340	....	LT 0.200	....	....	....	LT 20.000	....
11/19/86	RM	....	4.110	....	LT 0.200	....	....	....	LT 20.000	....
11/26/86	RM	....	3.820	....	LT 0.200	....	....	....	LT 20.000	....
12/03/86	RM	....	4.360	....	LT 0.200	....	....	....	LT 20.000	....
12/10/86	RM	....	4.340	....	LT 0.200	....	....	....	LT 20.000	....
12/17/86	RM	....	4.310	....	LT 0.200	....	....	....	LT 20.000	....
12/31/86	RM	....	5.000	....	LT 0.200	....	....	....	LT 20.000	....
01/07/87	RM	....	2.930	....	LT 0.200	....	....	....	LT 20.000	....
01/14/87	RM	....	3.000	....	LT 0.200	....	....	....	LT 20.000	....
01/21/87	RM	....	3.770	....	LT 0.200	2.000	....	....	LT 20.000	....
01/28/87	RM	....	3.430	....	LT 0.200	1.000	....	....	LT 20.000	....
02/04/87	RM	....	3.310	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
02/11/87	RM	....	4.160	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
02/18/87	RM	....	3.260	....	LT 0.200	1.000	....	....	LT 20.000	....
02/25/87	RM	....	4.070	....	LT 0.200	2.000	....	....	LT 20.000	....
03/04/87	RM	....	3.800	....	LT 0.200	1.000	....	....	LT 20.000	....
03/11/87	RM	....	2.050	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
03/18/87	RM	....	3.270	....	LT 0.200	2.000	....	....	LT 20.000	....
03/25/87	RM	....	3.290	....	LT 0.200	3.000	....	....	LT 20.000	....
04/01/87	RM	....	3.740	....	LT 0.200	3.000	....	....	LT 20.000	....
04/08/87	RM	....	3.470	....	LT 0.200	3.000	....	....	LT 20.000	....
04/14/87	RM	....	2.960	....	LT 0.200	2.000	....	....	LT 20.000	....
04/22/87	RM	....	2.680	....	LT 0.200	3.000	....	....	LT 20.000	....
04/29/87	RM	....	3.940	....	LT 0.200	2.000	....	....	LT 20.000	....
05/06/87	RM	....	3.980	....	LT 0.200	2.000	....	....	LT 20.000	....
05/13/87	RM	....	3.730	....	LT 0.200	2.000	....	....	LT 20.000	....
05/27/87	RM	....	3.140	....	LT 0.200	2.000	....	....	LT 20.000	....
06/03/87	RM	....	3.310	....	LT 0.200	2.000	....	....	LT 20.000	....
06/10/87	RM	....	3.650	....	LT 0.200	3.000	....	....	LT 20.000	....
06/17/87	RM	....	3.210	....	LT 0.200	2.000	....	....	LT 20.000	....
07/01/87	RM	....	3.610	....	LT 0.200	1.000	....	....	LT 20.000	....
07/08/87	RM	....	3.090	....	LT 0.200	2.000	....	....	LT 20.000	....
07/15/87	RM	....	3.270	....	LT 0.200	3.000	....	....	LT 20.000	....
07/22/87	RM	....	2.840	....	LT 0.200	3.000	....	....	LT 20.000	....
07/29/87	RM	....	4.000	....	LT 0.200	1.000	....	....	LT 20.000	....
08/05/87	ES LT	0.620	2.670	LT 0.083	LT 0.056	LT 2.100	LT 12.900	LT 1.040	LT 1.350	LT 1.340
08/12/87	ES	....	....	....	....	....	....	....	....	....
08/19/87	ES	....	3.600	LT 0.083	LT 0.056	....	LT 12.900	....	....	....
08/26/87	ES	....	3.580	0.471	LT 0.056	....	LT 12.900	....	....	....
09/02/87	ES	0.950	3.600	LT 0.083	LT 0.056	4.080	LT 12.900	LT 1.040	5.290	LT 1.340
09/09/87	ES	....	4.060	LT 0.083	LT 0.056	....	LT 12.900	....	....	....
09/23/87	ES	....	3.970	....	....	....	LT 12.900	....	....	....
09/30/87	ES LT	0.620	3.590	0.581	LT 0.056	LT 2.100	LT 12.900	LT 1.040	4.620	LT 1.340

LT = LESS THAN The Following Concentration

.... INDICATES THAT ANALYSIS WAS NOT PERFORMED

ug/l = MICROGRAM PER LITER

mg/l = MILLIGRAM PER LITER

NORTH BOUNDARY TREATMENT PLANT - ADSORBER A FOR FY87

INFLUENT

SAMPLE DATE	PPDDE ORG.	PPDDT ug/l	SO4 mg/l	T12DCE ug/l	TCLEE ug/l	TRCLE ug/l
10/01/86 RM	LT 1.000
10/08/86 RM	LT 1.000
10/15/86 RM	LT 1.000
10/22/86 RM	LT 1.000
10/29/86 RM	LT 1.000
11/05/86 RM	LT 1.000
11/12/86 RM	LT 1.000
11/19/86 RM	LT 1.000
11/26/86 RM	LT 1.000
12/03/86 RM
12/10/86 RM
12/17/86 RM
12/31/86 RM
01/07/87 RM
01/14/87 RM	LT 1.000
01/21/87 RM	LT 1.000
01/28/87 RM	LT 1.000
02/04/87 RM	LT 1.000
02/11/87 RM	LT 1.000
02/18/87 RM	LT 1.000
02/25/87 RM	LT 1.000
03/04/87 RM	40.000	LT 1.000
03/11/87 RM	LT 1.000	LT 1.000
3/18/87 RM	70.000	LT 1.000
3/25/87 RM	30.000	LT 1.000
04/01/87 RM	40.000	6.000
04/08/87 RM	40.000	4.000
04/14/87 RM	40.000	7.000
04/22/87 RM	40.000	6.000
04/29/87 RM	40.000	4.000
05/06/87 RM	40.000	4.000
05/13/87 RM	40.000	8.000
05/27/87 RM	40.000	6.000
06/03/87 RM	40.000	9.000
06/10/87 RM	40.000	7.000
06/17/87 RM	40.000	6.000
07/01/87 RM	40.000	6.000
07/08/87 RM	40.000	6.000
07/15/87 RM	40.000	8.000
07/22/87 RM	40.000	4.000
07/29/87 RM	40.000	6.000
08/05/87 ES	LT 0.046	LT 0.059	451.000	LT 1.800	12.000	LT 1.300
08/12/87 ES
08/19/87 ES	LT 0.046	LT 0.059	362.000	....	....	....
08/26/87 ES	LT 0.046	LT 0.059	371.000	....	....	....
09/02/87 ES	LT 0.046	LT 0.059	365.000	LT 1.800	40.000	5.400
09/09/87 ES	LT 0.046	LT 0.059	371.000
09/23/87 ES	365.000
09/30/87 ES	LT 0.046	0.265	295.000	LT 1.800	26.000	3.100

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER B FOR FY87

		INFLUENT											
SAMPLE DATE	ORG.	111TCE ug/l	112TCE ug/l	110CE ug/l	110CLE ug/l	120CE ug/l	120CLE ug/l	ALDRN ug/l	AS ug/l	BT. ug/l			
10/01/86	RM	....	....	....	....	....	30.000	LT 0.200	....	....	
10/08/86	RM	....	....	....	....	....	10.000	LT 0.200	....	....	
10/15/86	RM	....	....	....	....	....	20.000	LT 0.200	....	....	
10/22/86	RM	....	....	....	....	....	8.000	LT 0.200	....	....	
10/29/86	RM	....	....	....	....	....	20.000	LT 0.200	....	....	
11/05/86	RM	....	....	....	....	....	10.000	LT 0.200	....	....	
11/12/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....	
11/19/86	RM	....	....	....	....	....	8.000	LT 0.200	....	....	
11/26/86	RM	....	....	....	....	....	20.000	LT 0.200	....	....	
12/03/86	RM	....	....	....	....	....	....	LT 0.200	....	....	
12/10/86	RM	....	....	....	....	....	....	LT 0.200	....	....	
12/17/86	RM	....	....	....	....	....	....	LT 0.200	....	....	
12/31/86	RM	....	....	....	....	....	....	LT 0.200	....	....	
01/07/87	RM	....	....	....	....	....	....	LT 0.200	....	....	
01/14/87	RM	....	....	....	....	....	20.000	LT 0.200	....	....	
01/21/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....	
01/28/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....	
02/04/87	RM	....	....	....	....	....	20.000	LT 0.200	....	....	
02/11/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....	
02/18/87	RM	....	....	....	....	....	20.000	LT 0.200	....	....	
02/25/87	RM	....	....	....	....	....	10.000	LT 0.200	....	....	
03/04/87	RM	....	....	....	....	....	20.000	LT 0.200	....	....	
03/11/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
03/18/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
03/25/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
04/01/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
04/08/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
04/14/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
04/22/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
04/29/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
05/06/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
05/13/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
05/27/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
06/03/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
06/10/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
06/17/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
07/01/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
07/08/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
07/15/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
07/22/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
07/29/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....	
08/05/87	ES	....	....	....	....	....	....	....	....	....
08/12/87	ES	....	....	....	....	....	....	....	....	....
08/19/87	ES	....	....	....	....	....	....	LT 0.083	....	....	
08/26/87	ES	....	....	....	....	....	....	LT 0.083	....	....	
09/02/87	ES	LT 1.090	LT 1.630	LT 1.850	LT 1.930	....	LT 2.070	LT 0.083	LT 2.500	LT 1.100		
09/09/87	ES	....	....	....	....	....	....	LT 0.083	....	....	
09/23/87	ES			
09/30/87	ES	LT 1.090	LT 1.630	LT 1.850	LT 1.930	LT 2.070	LT 0.083	LT 2.500	LT 1.100			

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER 8 FOR FY87

INFLUENT

SAMPLE DATE	ORG.	C6H6 ug/l	CCL4 ug/l	CH2CL2 ug/l	CHCL3 ug/l	CHLORIDE mg/l	CLC6H5 ug/l	CLOAN ug/l	CPMS ug/l	CPMSO ug/l
10/01/86	RM	....	LT 1.000	....	80.000	114.000	....	....	LT 20.000	LT 20.000
10/08/86	RM	....	LT 1.000	....	LT 1.000	92.100	....	....	LT 20.000	LT 20.000
10/15/86	RM	....	LT 1.000	....	30.000	116.000	....	....	LT 20.000	LT 20.000
10/22/86	RM	....	LT 1.000	....	LT 1.000	111.000	....	....	LT 20.000	LT 20.000
10/29/86	RM	....	LT 1.000	....	30.000	123.000	....	....	LT 20.000	LT 20.000
11/05/86	RM	....	LT 1.000	....	LT 1.000	117.000	....	....	LT 20.000	LT 20.000
11/12/86	RM	....	10.000	....	LT 1.000	110.000	....	....	LT 20.000	LT 20.000
11/19/86	RM	....	LT 1.000	....	LT 1.000	117.000	....	....	LT 20.000	LT 20.000
11/26/86	RM	....	LT 1.000	....	40.000	123.000	....	....	LT 20.000	LT 20.000
12/03/86	RM	....	....	....	....	111.000	....	....	LT 20.000	LT 20.000
12/10/86	RM	....	....	....	....	109.000	....	....	LT 20.000	LT 20.000
12/17/86	RM	....	....	....	....	117.000	....	....	LT 20.000	LT 20.000
12/31/86	RM	....	....	....	....	117.000	....	....	LT 20.000	LT 20.000
01/07/87	RM	....	....	....	....	129.000	....	....	LT 20.000	LT 20.000
01/14/87	RM	....	LT 1.000	....	LT 1.000	120.000	....	....	LT 20.000	LT 20.000
01/21/87	RM	....	LT 1.000	....	20.000	119.000	....	....	LT 20.000	LT 20.000
01/28/87	RM	....	LT 1.000	....	10.000	115.000	....	....	LT 20.000	LT 20.000
02/04/87	RM	....	LT 1.000	....	LT 1.000	129.000	....	....	LT 20.000	LT 20.000
02/11/87	RM	....	LT 1.000	....	7.000	185.000	....	....	LT 20.000	LT 20.000
02/18/87	RM	....	LT 1.000	....	LT 1.000	132.000	....	....	LT 20.000	LT 20.000
02/25/87	RM	....	LT 1.000	....	LT 1.000	125.000	....	....	LT 20.000	LT 20.000
03/04/87	RM	....	LT 1.000	....	LT 1.000	156.000	....	....	LT 20.000	28.600
03/11/87	RM	....	LT 1.000	....	20.000	152.000	....	....	LT 20.000	30.000
3/18/87	RM	....	LT 1.000	....	20.000	155.000	....	....	LT 20.000	LT 20.000
3/25/87	RM	....	10.000	....	20.000	150.000	....	....	LT 20.000	24.100
04/01/87	RM	....	LT 1.000	....	20.000	143.000	....	....	LT 20.000	21.100
04/08/87	RM	....	LT 1.000	....	50.000	133.000	....	....	LT 20.000	21.200
04/14/87	RM	....	10.000	....	20.000	178.000	....	....	LT 20.000	LT 20.000
04/22/87	RM	....	10.000	....	20.000	157.000	....	....	LT 20.000	LT 20.000
04/29/87	RM	....	10.000	....	20.000	136.000	....	....	LT 20.000	LT 20.000
05/06/87	RM	....	LT 1.000	....	20.000	151.000	....	....	LT 20.000	LT 20.000
05/13/87	RM	....	10.000	....	20.000	182.000	....	....	LT 20.000	LT 20.000
05/27/87	RM	....	10.000	....	20.000	200.000	....	....	LT 20.000	LT 20.000
06/03/87	RM	....	LT 1.000	....	20.000	151.000	....	....	LT 20.000	LT 20.000
06/10/87	RM	....	10.000	....	20.000	200.000	....	....	LT 20.000	LT 20.000
06/17/87	RM	....	10.000	....	20.000	200.000	....	....	LT 20.000	LT 20.000
07/01/87	RM	....	LT 1.000	....	20.000	156.000	....	....	LT 20.000	LT 20.000
07/08/87	RM	....	LT 1.000	....	20.000	200.000	....	....	LT 20.000	LT 20.000
07/15/87	RM	....	10.000	....	20.000	176.000	....	....	LT 20.000	LT 20.000
07/22/87	RM	....	20.000	....	20.000	161.000	....	....	LT 20.000	LT 20.000
07/29/87	RM	....	10.000	....	20.000	123.000	....	....	LT 20.000	LT 20.000
08/05/87	ES	....	....	....	....	....	....	....	....	....
08/12/87	ES	....	....	....	....	148.000	....	....	....	....
08/19/87	ES	....	....	....	....	119.000	....	LT 0.152	....	....
08/26/87	ES	....	....	....	....	109.000	....	LT 0.152	....	....
09/02/87	ES	LT 1.920	LT 1.690	LT 2.480	28.900	145.000	LT 1.360	LT 0.152	3.900	19.100
09/09/87	ES	....	....	....	....	140.000	....	LT 0.152	....	....
09/23/87	ES	135.000
09/30/87	ES	LT 1.920	LT 1.690	LT 2.480	16.400	109.000	LT 1.360	LT 0.152	3.810	23.400

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER B FOR FY87

INFLUENT

SAMPLE DATE	ORG.	CPMSO2 ug/l	DBCP ug/l	DCPD ug/l	DIMP ug/l	DITH ug/l	DLDRN ug/l	DMDS ug/l	DMMP ug/l	ENDRN ug/l
10/01/86	RM	LT 20.000	0.710	LT 1.000	68.900	LT 20.000	0.840	....	....	0.510
10/08/86	RM	LT 20.000	1.110	LT 1.000	66.200	LT 20.000	0.500	....	....	0.310
10/15/86	RM	LT 20.000	1.400	LT 1.000	63.500	LT 20.000	0.800	....	....	0.510
10/22/86	RM	LT 20.000	0.740	LT 1.000	65.200	LT 20.000	0.670	....	....	0.420
10/29/86	RM	LT 20.000	1.440	LT 1.000	70.500	LT 20.000	1.280	....	....	0.840
11/05/86	RM	LT 20.000	0.630	LT 1.000	72.300	LT 20.000	0.680	....	....	0.440
11/12/86	RM	LT 20.000	0.870	LT 1.000	69.400	LT 20.000	0.670	....	....	0.460
11/19/86	RM	LT 20.000	0.820	LT 1.000	72.200	LT 20.000	0.660	....	....	0.450
11/26/86	RM	LT 20.000	0.730	LT 1.000	61.900	LT 20.000	0.530	....	....	0.370
12/03/86	RM	LT 20.000	0.770	....	54.800	LT 20.000	0.640	....	....	0.430
12/10/86	RM	LT 20.000	0.890	....	63.800	LT 20.000	0.860	....	....	0.570
12/17/86	RM	LT 20.000	0.940	....	65.600	LT 20.000	0.850	....	....	0.570
12/31/86	RM	LT 20.000	1.120	....	73.500	LT 20.000	0.670	....	....	0.460
01/07/87	RM	LT 20.000	0.940	....	70.500	LT 20.000	0.340	....	....	0.290
01/14/87	RM	LT 20.000	0.780	LT 1.000	61.110	LT 20.000	0.690	....	....	0.540
01/21/87	RM	LT 20.000	0.560	3.000	60.200	LT 20.000	0.520	....	....	0.420
01/28/87	RM	LT 20.000	0.890	LT 1.000	64.300	LT 20.000	0.690	....	....	0.490
02/04/87	RM	LT 20.000	0.880	LT 1.000	75.900	LT 20.000	0.400	....	....	0.260
02/11/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
02/18/87	RM	LT 20.000	1.030	2.000	104.000	LT 20.000	0.360	....	....	0.230
02/25/87	RM	LT 20.000	1.140	LT 1.000	102.000	LT 20.000	0.550	....	....	0.340
03/04/87	RM	LT 20.000	1.450	1.000	122.000	LT 20.000	0.128	....	....	0.850
03/11/87	RM	LT 20.000	0.980	LT 1.000	111.000	LT 20.000	0.630	....	....	0.42
03/18/87	RM	LT 20.000	0.580	LT 1.000	84.700	LT 20.000	0.350	....	....	0.2
03/25/87	RM	LT 20.000	1.060	30.000	94.800	LT 20.000	0.710	....	....	0.4
04/01/87	RM	LT 20.000	0.840	20.000	96.000	LT 20.000	0.640	....	....	0.510
04/08/87	RM	LT 20.000	0.560	20.000	96.700	LT 20.000	0.770	....	....	0.490
04/14/87	RM	LT 20.000	1.380	30.000	103.000	LT 20.000	2.020	....	....	1.840
04/22/87	RM	LT 20.000	0.900	20.000	89.100	LT 20.000	0.750	....	....	0.610
04/29/87	RM	LT 20.000	0.810	20.000	91.500	LT 20.000	0.800	....	....	0.610
05/06/87	RM	LT 20.000	2.340	30.000	83.800	LT 20.000	1.210	....	....	0.930
05/13/87	RM	LT 20.000	0.970	30.000	109.000	LT 20.000	0.850	....	....	0.560
05/27/87	RM	LT 20.000	1.070	30.000	104.000	LT 20.000	0.760	....	....	0.610
06/03/87	RM	LT 20.000	0.880	20.000	100.000	LT 20.000	0.840	....	....	0.670
06/10/87	RM	LT 20.000	1.030	30.000	94.500	LT 20.000	0.580	....	....	0.420
06/17/87	RM	LT 20.000	1.130	40.000	94.100	LT 20.000	1.320	....	....	1.150
07/01/87	RM	LT 20.000	0.900	30.000	89.200	LT 20.000	0.990	....	....	0.600
07/08/87	RM	LT 20.000	1.010	30.000	88.600	LT 20.000	0.800	....	....	0.470
07/15/87	RM	LT 20.000	0.960	30.000	121.000	LT 20.000	0.810	....	....	0.640
07/22/87	RM	LT 20.000	0.640	20.000	106.000	LT 20.000	0.880	....	....	0.490
07/29/87	RM	LT 20.000	0.880	30.000	108.000	LT 20.000	0.830	....	....	0.510
08/05/87	ES	....	....	....	....	....	....	....	....	....
08/12/87	ES	....	....	20.400	174.000	....	....	....	LT 1.630	0.972
08/19/87	ES	....	1.120	LT 9.310	....	....	0.200	....	LT 1.630	0.137
08/26/87	ES	....	0.841	LT 9.310	96.000	....	0.555	....	LT 1.630	0.471
09/02/87	ES	5.200	1.030	21.500	143.000	LT 3.340	LT 0.054	LT 1.160	LT 1.630	LT 0.060
09/09/87	ES	....	1.170	14.100	170.000	....	1.110	....	LT 1.630	0.710
09/23/87	ES	1.060	17.300	176.000	LT 1.630
09/30/87	ES	6.150	1.150	15.300	10.600	LT 3.340	1.290	LT 1.160	LT 1.630	0.750

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER B FOR FY87

INFLUENT

SAMPLE DATE	ORG.	ETC6H5 ug/l	FLUORIDE mg/l	HCCPD ug/l	ISODR ug/l	MEC6H5 ug/l	MIBK ug/l	M-XYLENE ug/l	OXAT ug/l	O,P-XYLENE ug/l
10/01/86	RM	....	3.200	....	LT 0.200	....	....	....	LT 20.000	....
10/08/86	RM	....	3.490	....	LT 0.200	....	....	....	LT 20.000	....
10/15/86	RM	....	1.200	....	LT 0.200	....	....	....	LT 20.000	....
10/22/86	RM	....	3.120	....	LT 0.200	....	....	....	LT 20.000	....
10/29/86	RM	....	3.090	....	LT 0.200	....	....	....	LT 20.000	....
11/05/86	RM	....	3.760	....	LT 0.200	....	....	....	LT 20.000	....
11/12/86	RM	....	3.770	....	LT 0.200	....	....	....	LT 20.000	....
11/19/86	RM	....	2.910	....	LT 0.200	....	....	....	LT 20.000	....
11/26/86	RM	....	3.540	....	LT 0.200	....	....	....	LT 20.000	....
12/03/86	RM	....	3.290	....	LT 0.200	....	....	....	LT 20.000	....
12/10/86	RM	....	3.210	....	LT 0.200	....	....	....	LT 20.000	....
12/17/86	RM	....	3.210	....	LT 0.200	....	....	....	LT 20.000	....
12/31/86	RM	....	4.000	....	LT 0.200	....	....	....	LT 20.000	....
01/07/87	RM	....	3.240	....	LT 0.200	....	....	....	LT 20.000	....
01/14/87	RM	....	4.000	....	LT 0.200	....	....	....	LT 20.000	....
01/21/87	RM	....	4.330	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
01/28/87	RM	....	2.690	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
02/04/87	RM	....	2.940	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
02/11/87	RM	....	2.180	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
02/18/87	RM	....	2.650	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
02/25/87	RM	....	3.040	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
03/04/87	RM	....	2.990	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
03/11/87	RM	....	2.340	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
03/18/87	RM	....	2.710	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
03/25/87	RM	....	2.660	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
04/01/87	RM	....	2.810	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
04/08/87	RM	....	2.790	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
04/14/87	RM	....	2.560	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
04/22/87	RM	....	2.560	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
04/29/87	RM	....	2.940	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
05/06/87	RM	....	2.430	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
05/13/87	RM	....	2.960	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
05/27/87	RM	....	2.920	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
06/03/87	RM	....	2.730	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
06/10/87	RM	....	2.970	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
06/17/87	RM	....	2.930	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
07/01/87	RM	....	2.800	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
07/08/87	RM	....	3.040	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
07/15/87	RM	....	2.950	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
07/22/87	RM	....	2.990	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
07/29/87	RM	....	3.000	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
08/05/87	ES	....	....	....	....	....	....	....	....	....
08/12/87	ES	....	....	....	....	....	....	....	....	....
08/19/87	ES	....	2.610	LT 0.083	LT 0.056	....	LT 12.9	....	....	....
08/26/87	ES	....	2.410	LT 0.083	LT 0.056	....	LT 12.9	....	....	....
09/02/87	ES	LT 0.620	2.540	LT 0.083	LT 0.056	LT 2.10	LT 12.9	LT 1.040	LT 1.350	LT 1.340
09/09/87	ES	....	2.570	LT 0.083	LT 0.056	....	LT 12.9	....	....	....
09/23/87	ES	....	2.600	....	....	....	LT 12.9	....	....	....
09/30/87	ES	LT 0.620	2.360	LT 0.083	LT 0.056	LT 2.10	LT 12.9	LT 1.040	LT 1.350	LT 1.340

LT = LESS THAN The Following Concentration

.... INDICATES THAT ANALYSIS WAS NOT PERFORMED

ug/l = MICROGRAM PER LITER

mg/l = MILLIGRAM PER LITER

NORTH BOUNDARY TREATMENT PLANT - ADSORBER B FOR FY87

INFLUENT

SAMPLE DATE	ORG.	PPDDE ug/l	PPDDT ug/l	SO4 mg/l	T12DCE ug/l	TCLEE ug/l	TRCLE ug/l
10/01/86	RM	....	....	....	....	....	LT 1.000
10/08/86	RM	....	....	....	....	....	LT 1.000
10/15/86	RM	....	....	....	....	....	LT 1.000
10/22/86	RM	....	....	....	....	....	LT 1.000
10/29/86	RM	....	....	....	....	....	LT 1.000
11/05/86	RM	....	....	....	....	....	LT 1.000
11/12/86	RM	....	....	....	....	....	LT 1.000
11/19/86	RM	....	....	....	....	....	LT 1.000
11/26/86	RM	....	....	....	....	....	LT 1.000
12/03/86	RM	....	....	....	....	....	....
12/10/86	RM	....	....	....	....	....	....
12/17/86	RM	....	....	....	....	....	....
12/31/86	RM	....	....	....	....	....	....
01/07/87	RM	....	....	....	....	....	....
01/14/87	RM	....	....	....	....	....	LT 1.000
01/21/87	RM	....	....	....	....	....	LT 1.000
01/28/87	RM	....	....	....	....	....	LT 1.000
02/04/87	RM	....	....	....	....	....	LT 1.000
02/11/87	RM	....	....	....	....	....	LT 1.000
02/18/87	RM	....	....	....	....	....	LT 1.000
02/25/87	RM	....	....	....	....	....	LT 1.000
03/04/87	RM	....	....	....	....	20.000	LT 1.000
03/11/87	RM	....	....	....	....	LT 1.000	LT 1.000
03/18/87	RM	....	....	....	....	5.000	LT 1.000
03/25/87	RM	....	....	....	....	20.000	LT 1.000
04/01/87	RM	....	....	....	....	20.000	LT 1.000
04/08/87	RM	....	....	....	....	10.000	3.000
04/14/87	RM	....	....	....	....	20.000	5.000
04/22/87	RM	....	....	....	....	20.000	LT 1.000
04/29/87	RM	....	....	....	....	20.000	3.000
05/06/87	RM	....	....	....	....	20.000	3.000
05/13/87	RM	....	....	....	....	20.000	LT 1.000
05/27/87	RM	....	....	....	....	20.000	2.000
06/03/87	RM	....	....	....	....	10.000	LT 1.000
06/10/87	RM	....	....	....	....	20.000	LT 1.000
06/17/87	RM	....	....	....	....	20.000	3.000
07/01/87	RM	....	....	....	....	20.000	4.000
07/08/87	RM	....	....	....	....	20.000	5.000
07/15/87	RM	....	....	....	....	20.000	LT 1.000
07/22/87	RM	....	....	....	....	20.000	4.000
07/29/87	RM	....	....	....	....	20.000	4.000
08/05/87	ES	....	....	....	....	....	....
08/12/87	ES	....	....	....	....	....	....
08/19/87	ES	LT 0.046	LT 0.059	481.000	....	....	....
08/26/87	ES	LT 0.046	LT 0.059	407.000	....	....	....
09/02/87	ES	LT 0.046	LT 0.059	421.000	LT 1.800	13.000	LT 1.300
09/09/87	ES	LT 0.046	LT 0.059	466.000
09/23/87	ES	452.000
09/30/87	ES	LT 0.046	LT 0.059	364.000	LT 1.800	11.000	LT 1.300

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER C FOR FY87

INFLUENT

SAMPLE DATE	ORG.	111TCE ug/l	112TCE ug/l	110CE ug/l	110CLE ug/l	12DCE ug/l	12DCE ug/l	ALDRN ug/l	AS ug/l	BTA ug/l
10/01/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
10/08/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
10/15/86	RM	....	....	....	....	....	7.000	LT 0.200	....	....
10/22/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
10/29/86	RM	....	....	....	....	....	50.000	LT 0.200	....	....
11/05/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
11/12/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
11/19/86	RM	....	....	....	....	....	3.000	LT 0.200	....	....
11/26/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
12/03/86	RM	....	....	....	....	....	....	LT 0.200	....	....
12/10/86	RM	....	....	....	....	....	....	LT 0.200	....	....
12/17/86	RM	....	....	....	....	....	....	LT 0.200	....	....
12/31/86	RM	....	....	....	....	....	....	LT 0.200	....	....
01/07/87	RM	....	....	....	....	....	....	LT 0.200	....	....
01/14/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
01/21/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
01/28/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
02/04/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
02/11/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
02/18/87	RM	....	....	....	....	....	5.000	LT 0.200	....	....
02/25/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
03/04/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
03/11/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
3/18/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
3/25/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/01/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/08/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/14/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/22/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/29/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
05/06/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
05/13/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
05/27/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
06/03/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
06/10/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
06/17/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/01/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/08/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/15/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/22/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/29/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
08/05/87	ES	LT 1.090	LT 1.630	LT 1.850	LT 1.930	....	LT 2.070	LT 0.083	LT 2.500	LT 1.100
08/12/87	ES	....	....	....	....	....	....	....	....	....
08/19/87	ES	....	....	....	....	....	....	LT 0.083	....	....
08/26/87	ES	....	....	....	....	....	....	LT 0.083	....	....
09/02/87	ES	LT 1.090	LT 1.630	LT 1.850	LT 1.930	....	LT 2.070	LT 0.083	LT 2.500	LT 1.100
09/09/87	ES	....	....	....	....	....	....	LT 0.083	....	....
09/23/87	ES
09/30/87	ES	LT 1.090	LT 1.630	LT 1.850	LT 1.930	LT 2.070	LT 0.083	LT 2.500	LT 1.100

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER C FOR FY87

INFLUENT

SAMPLE DATE	ORG.	C6H6 ug/l	CCL4 ug/l	CH2CL2 ug/l	CHCL3 ug/l	CHLORIDE mg/l	CLC6H5 ug/l	CLDAM ug/l	CPMS ug/l	CPMS ug/l
10/01/86	RM	....	LT 1.000	....	LT 1.000	127.000	....	....	LT 20.000	LT 20.000
10/08/86	RM	....	LT 1.000	....	LT 1.000	204.000	....	....	LT 20.000	LT 20.000
10/15/86	RM	....	LT 1.000	....	LT 1.000	130.000	....	....	LT 20.000	LT 20.000
10/22/86	RM	....	LT 1.000	....	2.000	124.000	....	....	LT 20.000	LT 20.000
10/29/86	RM	....	LT 1.000	....	LT 1.000	134.000	....	....	LT 20.000	LT 20.000
11/05/86	RM	....	LT 1.000	....	LT 1.000	128.000	....	....	LT 20.000	LT 20.000
11/12/86	RM	....	LT 1.000	....	LT 1.000	100.000	....	....	LT 20.000	LT 20.000
11/19/86	RM	....	LT 1.000	....	LT 1.000	126.000	....	....	LT 20.000	LT 20.000
11/26/86	RM	....	LT 1.000	....	4.000	144.000	....	....	LT 20.000	LT 20.000
12/03/86	RM	....	....	....	....	119.000	....	....	LT 20.000	LT 20.000
12/10/86	RM	....	....	....	....	113.000	....	....	LT 20.000	LT 20.000
12/17/86	RM	....	....	....	....	117.000	....	....	LT 20.000	LT 20.000
12/31/86	RM	....	....	....	....	115.000	....	....	LT 20.000	LT 20.000
01/07/87	RM	....	....	....	....	214.000	....	....	LT 20.000	LT 20.000
01/14/87	RM	....	LT 1.000	....	LT 1.000	120.000	....	....	LT 20.000	LT 20.000
01/21/87	RM	....	LT 1.000	....	LT 1.000	113.000	....	....	LT 20.000	LT 20.000
01/28/87	RM	....	LT 1.000	....	LT 1.000	115.000	....	....	LT 20.000	LT 20.000
02/04/87	RM	....	LT 1.000	....	LT 1.000	121.000	....	....	LT 20.000	LT 20.000
02/11/87	RM	....	LT 1.000	....	LT 1.000	117.000	....	....	LT 20.000	LT 20.000
02/18/87	RM	....	LT 1.000	....	LT 1.000	133.000	....	....	LT 20.000	LT 20.000
02/25/87	RM	....	LT 1.000	....	LT 1.000	121.000	....	....	LT 20.000	LT 20.000
03/04/87	RM	....	LT 1.000	....	LT 1.000	126.000	....	....	LT 20.000	LT 20.000
03/11/87	RM	....	LT 1.000	....	20.000	109.000	....	....	LT 20.000	LT 20.000
03/18/87	RM	....	LT 1.000	....	LT 1.000	110.000	....	....	LT 20.000	LT 20.000
03/25/87	RM	....	LT 1.000	....	LT 1.000	131.000	....	....	LT 20.000	LT 20.000
04/01/87	RM	....	LT 1.000	....	LT 1.000	102.000	....	....	LT 20.000	LT 20.000
04/08/87	RM	....	LT 1.000	....	LT 1.000	112.000	....	....	LT 20.000	LT 20.000
04/14/87	RM	....	LT 1.000	....	LT 1.000	147.000	....	....	LT 20.000	LT 20.000
04/22/87	RM	....	LT 1.000	....	LT 1.000	128.000	....	....	LT 20.000	LT 20.000
04/29/87	RM	....	LT 1.000	....	LT 1.000	110.000	....	....	LT 20.000	LT 20.000
05/06/87	RM	....	LT 1.000	....	LT 1.000	127.000	....	....	LT 20.000	LT 20.000
05/13/87	RM	....	LT 1.000	....	LT 1.000	128.000	....	....	LT 20.000	LT 20.000
05/27/87	RM	....	LT 1.000	....	8.000	100.000	....	....	LT 20.000	LT 20.000
06/03/87	RM	....	LT 1.000	....	LT 1.000	114.000	....	....	LT 20.000	LT 20.000
06/10/87	RM	....	LT 1.000	....	60.000	100.000	....	....	LT 20.000	LT 20.000
06/17/87	RM	....	LT 1.000	....	LT 1.000	100.000	....	....	LT 20.000	LT 20.000
07/01/87	RM	....	LT 1.000	....	LT 1.000	117.000	....	....	LT 20.000	LT 20.000
07/08/87	RM	....	LT 1.000	....	LT 1.000	100.000	....	....	LT 20.000	LT 20.000
07/15/87	RM	....	LT 1.000	....	LT 1.000	119.000	....	....	LT 20.000	LT 20.000
07/22/87	RM	....	LT 1.000	....	LT 1.000	103.000	....	....	LT 20.000	LT 20.000
07/29/87	RM	....	LT 1.000	....	4.000	582.000	....	....	LT 20.000	LT 20.000
08/05/87	ES	LT 1.920	2.330	LT 2.480	LT 1.880	941.000	LT 1.360	LT 0.152	LT 1.080	LT 1.980
08/12/87	ES	....	....	....	....	....	....	....	....	....
08/19/87	ES	....	....	....	....	105.000	....	LT 0.152	....	....
08/26/87	ES	....	....	....	....	103.000	....	LT 0.152	....	....
09/02/87	ES	LT 1.920	2.740	LT 2.480	LT 1.880	110.000	LT 1.360	LT 0.152	LT 1.080	LT 1.980
09/09/87	ES	....	....	....	....	995.000	....	LT 0.152	....	....
09/23/87	ES	....	....	....	....	959.000	....	....	....	....
09/30/87	ES	LT 1.920	2.790	LT 2.480	LT 1.880	811.000	LT 1.360	LT 0.152	LT 1.080	LT 1.980

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER C FOR FY87

INFLUENT

SAMPLE DATE	ORG.	CPHSQ2 ug/l	DBCP ug/l	OCPO ug/l	DIMP ug/l	DITH ug/l	DLDRN ug/l	DMDS ug/l	DMMP ug/l	ENDRN ug/l
10/01/86	RM	....	0.320	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
10/08/86	RM	LT 20.000	0.410	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
10/15/86	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	0.310	....	....	LT 0.200
10/22/86	RM	LT 20.000	0.310	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
10/29/86	RM	LT 20.000	0.470	LT 1.000	LT 10.000	LT 20.000	0.260	....	....	LT 0.200
11/05/86	RM	LT 20.000	0.250	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
11/12/86	RM	LT 20.000	0.340	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
11/19/86	RM	LT 20.000	0.300	LT 1.000	LT 10.000	LT 20.000	0.200	....	....	LT 0.200
11/26/86	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
12/03/86	RM	LT 20.000	0.310	....	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
12/10/86	RM	LT 20.000	0.450	....	LT 10.000	LT 20.000	0.240	....	....	LT 0.200
12/17/86	RM	LT 20.000	0.400	....	LT 10.000	LT 20.000	0.270	....	....	LT 0.200
12/31/86	RM	LT 20.000	LT 0.200	....	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
01/07/87	RM	LT 20.000	0.290	....	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
01/14/87	RM	LT 20.000	0.290	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
01/21/87	RM	LT 20.000	LT 0.200	4.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
01/28/87	RM	LT 20.000	0.320	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
02/04/87	RM	LT 20.000	0.260	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
02/11/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
02/18/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
02/25/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
03/04/87	RM	LT 20.000	LT 0.200	2.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
03/11/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
03/18/87	RM	LT 20.000	0.260	LT 1.000	LT 10.000	LT 20.000	0.200	....	....	LT 0.200
03/25/87	RM	LT 20.000	LT 0.200	2.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
04/01/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
04/08/87	RM	LT 20.000	LT 0.200	7.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
04/14/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	0.410	....	....	LT 0.200
04/22/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
04/29/87	RM	LT 20.000	LT 0.200	1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
05/06/87	RM	LT 20.000	0.450	1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
05/13/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
05/27/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
06/03/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
06/10/87	RM	LT 20.000	0.250	LT 1.000	LT 10.000	LT 20.000	0.370	....	....	LT 0.200
06/17/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
07/01/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
07/08/87	RM	LT 20.000	LT 0.200	2.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
07/15/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
07/22/87	RM	LT 20.000	LT 0.200	4.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
07/29/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
08/05/87	ES	3.320	0.204	LT 9.310	13.500	LT 3.340	0.122	LT 1.16	LT 16.300	0.080
08/12/87	ES	....	....	....	LT 10.100	....	....	....	LT 16.300	....
08/19/87	ES	....	0.247	LT 9.310	....	....	LT 0.540	....	....	LT 0.060
08/26/87	ES	....	0.228	LT 9.310	LT 10.100	....	0.013	....	LT 16.300	0.063
09/02/87	ES	4.490	0.232	LT 9.310	13.500	LT 3.340	0.121	LT 1.16	LT 16.300	LT 0.060
09/09/87	ES	....	0.227	LT 9.310	LT 10.100	....	0.109	....	LT 16.300	LT 0.060
09/23/87	ES	0.212	LT 9.310	LT 10.100	LT 16.300
09/30/87	ES	4.610	0.190	LT 9.310	LT 10.100	LT 3.340	0.107	LT 1.16	LT 16.300	LT 0.060

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER C FOR FY87

INFLUENT

SAMPLE DATE	ORG.	ETC6H5 ug/l	FLUORIDE mg/l	HCCPD ug/l	ISODR ug/l	MEC6H5 ug/l	MIBK ug/l	M-XYLENE ug/l	OXAT ug/l	O,P-XYL ug/l
10/01/86	RM	....	2.050	....	LT 0.200	....	....	....	LT 20.000	....
10/08/86	RM	....	1.890	....	LT 0.200	....	....	....	LT 20.000	....
10/15/86	RM	....	1.600	....	LT 0.200	....	....	....	LT 20.000	....
10/22/86	RM	....	1.730	....	LT 0.200	....	....	....	LT 20.000	....
10/29/86	RM	....	1.670	....	LT 0.200	....	....	....	LT 20.000	....
11/05/86	RM	....	1.930	....	LT 0.200	....	....	....	LT 20.000	....
11/12/86	RM	....	1.950	....	LT 0.200	....	....	....	LT 20.000	....
11/19/86	RM	....	1.590	....	LT 0.200	....	....	....	LT 20.000	....
11/26/86	RM	....	2.050	....	LT 0.200	....	....	....	LT 20.000	....
12/03/86	RM	....	2.050	....	LT 0.200	....	....	....	LT 20.000	....
12/10/86	RM	....	2.120	....	LT 0.200	....	....	....	LT 20.000	....
12/17/86	RM	....	1.940	....	LT 0.200	....	....	....	LT 20.000	....
12/31/86	RM	....	2.000	....	LT 0.200	....	....	....	LT 20.000	....
01/07/87	RM	....	1.750	....	LT 0.200	....	....	....	LT 20.000	....
01/14/87	RM	....	2.000	....	LT 0.200	....	....	....	LT 20.000	....
01/21/87	RM	....	1.260	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
01/28/87	RM	....	1.390	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
02/04/87	RM	....	1.560	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
02/11/87	RM	....	1.570	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
02/18/87	RM	....	1.380	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
02/25/87	RM	....	1.790	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
03/04/87	RM	....	1.790	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
03/11/87	RM	....	1.940	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
03/18/87	RM	....	1.650	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
03/25/87	RM	....	1.650	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
04/01/87	RM	....	1.660	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
04/08/87	RM	....	1.410	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
04/14/87	RM	....	1.170	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
04/22/87	RM	....	1.300	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
04/29/87	RM	....	1.680	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
05/06/87	RM	....	1.770	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
05/13/87	RM	....	1.720	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
05/27/87	RM	....	1.830	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
06/03/87	RM	....	1.730	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
06/10/87	RM	....	1.940	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
06/17/87	RM	....	1.780	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
07/01/87	RM	....	1.820	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
07/08/87	RM	....	1.720	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
07/15/87	RM	....	0.940	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
07/22/87	RM	....	1.510	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
07/29/87	RM	....	2.000	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
08/05/87	ES	....	1.760	LT 0.083	LT 0.056	LT 2.100	LT 12.900	LT 1.040	LT 1.350	LT 1.340
08/12/87	ES	....	....	....	....	....	....	....	....	....
08/19/87	ES	....	1.640	LT 0.083	LT 0.056	....	LT 12.900	....	....	....
08/26/87	ES	....	1.470	LT 0.083	LT 0.056	....	LT 12.900	....	....	....
09/02/87	ES	LT 0.620	1.570	LT 0.083	LT 0.056	LT 2.100	LT 12.900	LT 1.040	LT 1.350	LT 1.340
09/09/87	ES	....	1.610	LT 0.083	LT 0.056	....	LT 12.900	....	....	....
09/23/87	ES	....	1.690	....	....	....	LT 12.900	....	....	....
09/30/87	ES	LT 0.620	1.530	LT 0.083	LT 0.056	LT 2.100	LT 12.900	LT 1.040	LT 1.350	LT 1.340

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER C FOR FY87

INFLUENT

SAMPLE DATE	ORG.	PPDDE ug/l	PPDDT ug/l	SO4 mg/l	T12DCE ug/l	TCLEE ug/l	TRCLE ug/l
10/01/86	RM	....	....	....	....	....	LT 1.000
10/08/86	RM	....	....	....	....	....	LT 1.000
10/15/86	RM	....	....	....	....	....	LT 1.000
10/22/86	RM	....	....	....	....	....	LT 1.000
10/29/86	RM	....	....	....	....	....	LT 1.000
11/05/86	RM	....	....	....	....	....	LT 1.000
11/12/86	RM	....	....	....	....	....	LT 1.000
11/19/86	RM	....	....	....	....	....	LT 1.000
11/26/86	RM	....	....	....	....	....	LT 1.000
12/03/86	RM	....	....	....	....	....	....
12/10/86	RM	....	....	....	....	....	....
12/17/86	RM	....	....	....	....	....	....
12/31/86	RM	....	....	....	....	....	....
01/07/87	RM	....	....	....	....	....	....
01/14/87	RM	....	....	....	....	....	LT 1.000
01/21/87	RM	....	....	....	....	....	LT 1.000
01/28/87	RM	....	....	....	....	....	LT 1.000
02/04/87	RM	....	....	....	....	....	LT 1.000
02/11/87	RM	....	....	....	....	....	LT 1.000
02/18/87	RM	....	....	....	....	....	LT 1.000
02/25/87	RM	....	....	....	....	....	LT 1.000
03/04/87	RM	....	....	....	....	LT 1.000	LT 1.000
03/11/87	RM	....	....	....	....	LT 1.000	LT 1.000
3/18/87	RM	....	....	....	....	LT 1.000	LT 1.000
3/25/87	RM	....	....	....	....	LT 1.000	LT 1.000
04/01/87	RM	....	....	....	....	LT 1.000	LT 1.000
04/08/87	RM	....	....	....	....	LT 1.000	LT 1.000
04/14/87	RM	....	....	....	....	LT 1.000	LT 1.000
04/22/87	RM	....	....	....	....	LT 1.000	LT 1.000
04/29/87	RM	....	....	....	....	LT 1.000	LT 1.000
05/06/87	RM	....	....	....	....	LT 1.000	LT 1.000
05/13/87	RM	....	....	....	....	LT 1.000	LT 1.000
05/27/87	RM	....	....	....	....	LT 1.000	LT 1.000
06/03/87	RM	....	....	....	....	LT 1.000	LT 1.000
06/10/87	RM	....	....	....	....	LT 1.000	LT 1.000
06/17/87	RM	....	....	....	....	LT 1.000	LT 1.000
07/01/87	RM	....	....	....	....	LT 1.000	LT 1.000
07/08/87	RM	....	....	....	....	LT 1.000	LT 1.000
07/15/87	RM	....	....	....	....	LT 1.000	LT 1.000
07/22/87	RM	....	....	....	....	30.000	LT 1.000
07/29/87	RM	....	....	....	....	LT 1.000	LT 1.000
08/05/87	ES	LT 0.046	LT 0.059	338.000	LT 1.800	LT 2.800	LT 1.300
08/12/87	ES	....	....	....	....	....	....
08/19/87	ES	LT 0.046	LT 0.059	358.000	....	....	....
08/26/87	ES	LT 0.046	LT 0.059	340.000	....	....	....
09/02/87	ES	LT 0.046	LT 0.059	351.000	LT 1.800	LT 2.800	LT 1.300
09/09/87	ES	LT 0.046	LT 0.059	357.000	....	....	....
09/23/87	ES	....	....	354.000	....	....	....
09/30/87	ES	LT 0.046	LT 0.059	287.000	LT 1.800	LT 2.800	LT 1.300

LT = LESS THAN The Following Concentration

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ug/l = MICROGRAM PER LITER

mg/l = MILLIGRAM PER LITER

NORTH BOUNDARY TREATMENT PLANT - ADSORBER A FOR FY87

SAMPLE DATE	ORG.	C6H6 ug/l	CCL4 ug/l	CH2CL2 ug/l	CHCL3 ug/l	CHLORIDE mg/l	CLC6H5 ug/l	CLOAM ug/l	CPMS ug/l	CLSO ug/l
10/01/86	RM	....	20.000	....	....	667.000	....	....	LT 20.000	28.40
10/08/86	RM	....	LT 1.000	....	LT 1.000	433.000	....	....	LT 20.000	LT 20.000
10/15/86	RM	....	9.000	....	100.000	687.000	....	....	LT 20.000	33.400
10/22/86	RM	....	9.000	....	80.000	605.000	....	....	LT 20.000	26.50
10/29/86	RM	....	5.000	....	40.000	645.000	....	....	LT 20.000	LT 20.00
11/05/86	RM	....	LT 1.000	....	LT 1.000	474.000	....	....	LT 20.000	LT 20.000
11/12/86	RM	....	7.000	....	80.000	601.000	....	....	LT 20.000	LT 20.000
11/19/86	RM	....	5.000	....	30.000	591.000	....	....	LT 20.000	LT 20.00
11/26/86	RM	....	4.000	....	40.000	605.000	....	....	LT 20.000	LT 20.00
12/03/86	RM	....	....	....	....	586.000	....	....	LT 20.000	LT 20.000
12/10/86	RM	....	....	....	....	581.000	....	....	LT 20.000	LT 20.000
12/17/86	RM	....	....	....	....	580.000	....	....	LT 20.000	LT 20.00
12/31/86	RM	....	....	....	....	671.000	....	....	LT 20.000	22.90
01/07/87	RM	....	....	....	....	483.000	....	....	LT 20.000	LT 20.000
01/14/87	RM	....	LT 1.000	....	10.000	665.000	....	....	LT 20.000	LT 20.000
01/21/87	RM	....	LT 1.000	....	LT 1.000	621.000	....	....	LT 20.000	LT 20.00
01/28/87	RM	....	LT 1.000	....	8.000	564.000	....	....	LT 20.000	LT 20.000
02/04/87	RM	....	LT 1.000	....	8.000	641.000	....	....	LT 20.000	LT 20.000
02/11/87	RM	....	LT 1.000	....	LT 1.000	574.000	....	....	LT 20.000	LT 20.00
02/18/87	RM	....	LT 1.000	....	LT 1.000	664.000	....	....	LT 20.000	20.50
02/25/87	RM	....	LT 1.000	....	LT 1.000	674.000	....	....	LT 20.000	20.000
03/04/87	RM	....	LT 1.000	....	LT 1.000	651.000	....	....	LT 20.000	LT 20.000
03/11/87	RM	....	LT 1.000	....	LT 1.000	299.000	....	....	LT 20.000	LT 20.00
03/18/87	RM	....	LT 1.000	....	20.000	766.000	....	....	LT 20.000	LT 20.00
03/25/87	RM	....	70.000	....	LT 1.000	496.000	....	....	LT 20.000	LT 20.00
04/01/87	RM	....	LT 1.000	....	10.000	590.000	....	....	LT 20.000	LT 20.000
04/08/87	RM	....	LT 1.000	....	8.000	567.000	....	....	LT 20.000	LT 20.00
04/14/87	RM	....	100.000	....	10.000	754.000	....	....	LT 20.000	LT 20.00
04/22/87	RM	....	100.000	....	9.000	680.000	....	....	LT 20.000	23.000
04/29/87	RM	....	100.000	....	8.000	664.000	....	....	LT 20.000	LT 20.000
05/06/87	RM	....	LT 1.000	....	6.000	680.000	....	....	LT 20.000	LT 20.000
05/13/87	RM	....	100.000	....	7.000	699.000	....	....	LT 20.000	21.900
05/27/87	RM	....	90.000	....	8.000	600.000	....	....	LT 20.000	LT 20.000
06/03/87	RM	....	LT 1.000	....	5.000	730.000	....	....	LT 20.000	20.100
06/10/87	RM	....	100.000	....	20.000	700.000	....	....	LT 20.000	LT 20.000
06/17/87	RM	....	100.000	....	20.000	800.000	....	....	LT 20.000	LT 20.000
07/01/87	RM	....	LT 1.000	....	6.000	619.000	....	....	LT 20.000	22.200
07/08/87	RM	....	LT 1.000	....	10.000	700.000	....	....	LT 20.000	LT 20.000
07/15/87	RM	....	100.000	....	20.000	773.000	....	....	LT 20.000	LT 20.000
07/22/87	RM	....	100.000	....	20.000	581.000	....	....	LT 20.000	LT 20.000
07/29/87	RM	....	90.000	....	10.000	860.000	....	....	LT 20.000	22.900
08/05/87	ES	LT 1.920	LT 1.690	LT 2.480	22.500	130.000	LT 1.360	LT 0.152	2.600	18.500
08/12/87	ES	....	....	....	....	....	....	....	....	....
08/19/87	ES	....	....	....	....	784.000	....	LT 0.152	....	....
08/26/87	ES	....	....	....	....	772.000	....	LT 0.152	....	....
09/02/87	ES	LT 1.920	LT 1.690	LT 2.480	14.200	835.000	LT 1.360	LT 0.152	6.150	28.500
09/09/87	ES	....	....	....	....	717.000	....	LT 0.152	....	....
09/23/87	ES	754.000
09/30/87	ES	LT 1.920	LT 1.690	LT 2.480	5.550	534.000	LT 1.360	LT 0.152	4.380	21.600

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER A FOR FY87

SAMPLE DATE	ORG.	111TCE ug/l	112TCE ug/l	110DCE ug/l	110CLE ug/l	120DCE ug/l	120CLE ug/l	ALDRN ug/l	AS ug/l	BTA ug/l
10/01/86 RM		....	....	....	....	....	20.000	LT 0.200	....	....
10/08/86 RM		....	....	....	....	....	10.000	LT 0.200	....	....
10/15/86 RM		....	....	....	....	....	20.000	LT 0.200	....	....
10/22/86 RM		....	....	....	....	....	10.000	LT 0.200	....	....
10/29/86 RM		....	....	....	....	....	10.000	LT 0.200	....	....
11/05/86 RM		....	....	....	....	....	10.000	LT 0.200	....	....
11/12/86 RM		....	....	....	....	....	10.000	LT 0.200	....	....
11/19/86 RM		....	....	....	....	....	6.000	LT 0.200	....	....
11/26/86 RM		....	....	....	....	....	....	LT 0.200	....	....
12/03/86 RM		....	....	....	....	....	....	LT 0.200	....	....
12/10/86 RM		....	....	....	....	....	....	LT 0.200	....	....
12/17/86 RM		....	....	....	....	....	....	LT 0.200	....	....
12/31/86 RM		....	....	....	....	....	....	LT 0.200	....	....
01/07/87 RM		....	....	....	....	....	....	LT 0.200	....	....
01/14/87 RM		....	....	....	....	....	20.000	LT 0.200	....	....
01/21/87 RM		....	....	....	....	....	20.000	LT 0.200	....	....
01/28/87 RM		....	....	....	....	....	8.000	LT 0.200	....	....
02/04/87 RM		....	....	....	....	....	30.000	LT 0.200	....	....
02/11/87 RM		....	....	....	....	....	LT 1.000	LT 0.200	....	....
02/18/87 RM		....	....	....	....	....	20.000	LT 0.200	....	....
02/25/87 RM		....	....	....	....	....	20.000	LT 0.200	....	....
03/04/87 RM		....	....	....	....	....	LT 1.000	LT 0.200	....	....
03/11/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
03/18/87 RM		....	....	....	....	7.000	4.000	LT 0.200	....	....
03/25/87 RM		....	....	....	....	2.000	LT 1.000	LT 0.200	....	....
04/01/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/08/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/14/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/22/87 RM		....	....	....	....	2.000	LT 1.000	LT 0.200	....	....
04/29/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
05/06/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
05/13/87 RM		....	....	....	....	3.000	LT 1.000	LT 0.200	....	....
05/27/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
06/03/87 RM		....	....	....	....	3.000	6.000	LT 0.200	....	....
06/10/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
06/17/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/01/87 RM		....	....	....	....	LT 1.000	5.000	LT 0.200	....	....
07/08/87 RM		....	....	....	....	LT 1.000	8.000	LT 0.200	....	....
07/15/87 RM		....	....	....	....	LT 1.000	3.000	LT 0.200	....	....
07/22/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/29/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
08/05/87 ES	LT	1.090	LT 1.630	LT 1.850	LT 1.930	....	LT 2.070	LT 0.083	LT 2.500	LT 1.100
08/12/87 ES	....	....	....	....	....	....	....	....	....	....
08/19/87 ES	....	....	....	....	....	....	....	LT 0.083	....	....
08/26/87 ES	....	....	....	....	....	....	....	LT 0.083	....	....
09/02/87 ES	LT	1.090	LT 1.630	LT 1.850	LT 1.930	....	60.100	LT 0.083	LT 2.500	LT 1.100
09/09/87 ES	LT 0.083
09/23/87 ES
09/30/87 ES	LT	1.090	LT 1.630	LT 1.850	LT 1.930	2.900	LT 0.083	5.090	1.300

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER A FOR FY87

SAMPLE DATE	CPMSO2 ORG. ug/l	DBCP ug/l	DCPD ug/l	DIMP ug/l	DITH ug/l	DLDRN ug/l	DMDS ug/l	DMMP ug/l	END. ug/l
10/01/86	RM 31.000	1.100	300.000	579.000	LT 20.000	2.940	....	....	0.850
10/08/86	RM LT 20.000	0.700	200.000	300.000	LT 20.000	LT 0.200	....	....	LT 0.200
10/15/86	RM 31.800	1.440	400.000	589.000	LT 20.000	3.450	....	....	LT 0.200
10/22/86	RM 24.900	0.900	200.000	583.000	LT 20.000	2.170	....	....	1.020
10/29/86	RM LT 20.000	1.060	200.000	468.000	LT 20.000	1.960	....	....	LT 0.200
11/05/86	RM LT 20.000	0.600	300.000	452.000	LT 20.000	0.780	....	....	0.240
11/12/86	RM 20.800	0.830	300.000	511.000	LT 20.000	2.490	....	....	1.040
11/19/86	RM LT 20.000	0.740	200.000	570.000	LT 20.000	2.070	....	....	0.880
11/26/86	RM 21.300	0.470	200.000	523.000	LT 20.000	2.080	....	....	0.770
12/03/86	RM 21.200	0.920	....	533.000	LT 20.000	3.630	....	....	1.040
12/10/86	RM 22.200	0.920	....	583.000	LT 20.000	2.950	....	....	1.260
12/17/86	RM LT 20.000	0.730	....	545.000	LT 20.000	1.730	....	....	LT 0.200
12/31/86	RM 24.800	0.830	....	643.000	LT 20.000	2.050	....	....	0.760
01/07/87	RM LT 20.000	0.620	....	405.000	LT 20.000	0.570	....	....	0.230
01/14/87	RM LT 20.000	0.490	300.000	479.000	LT 20.000	1.700	....	....	LT 0.200
01/21/87	RM 21.500	0.620	400.000	539.000	LT 20.000	0.830	....	....	LT 0.200
01/28/87	RM LT 20.000	0.600	300.000	517.000	LT 20.000	0.600	....	....	LT 0.200
02/04/87	RM 20.300	0.670	300.000	607.000	LT 20.000	1.770	....	....	0.780
02/11/87	RM LT 20.000	0.200	10.000	321.000	LT 20.000	LT 0.200	....	....	LT 0.200
02/18/87	RM 20.000	0.50	400.000	788.000	LT 20.000	1.640	....	....	0.600
02/25/87	RM 20.000	0.20	400.000	734.000	LT 20.000	2.260	....	....	0.640
03/04/87	RM 23.700	0.60	300.000	823.000	LT 20.000	1.120	....	....	0.360
03/11/87	RM LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
03/18/87	RM 30.100	0.980	500.000	688.000	LT 20.000	1.980	....	....	0.200
03/25/87	RM LT 20.000	0.380	100.000	397.000	LT 20.000	0.410	....	....	LT 0.200
04/01/87	RM 20.800	0.590	100.000	714.000	LT 20.000	1.850	....	....	LT 0.200
04/08/87	RM LT 20.000	0.560	100.000	578.000	LT 20.000	1.230	....	....	0.490
04/14/87	RM 20.500	0.750	100.000	643.000	LT 20.000	1.780	....	....	1.140
04/22/87	RM 27.700	0.520	100.000	737.000	LT 20.000	1.850	....	....	1.250
04/29/87	RM 20.400	0.650	100.000	763.000	LT 20.000	1.870	....	....	1.390
05/06/87	RM 20.700	1.710	100.000	743.000	LT 20.000	2.080	....	....	1.200
05/13/87	RM 21.000	0.670	100.000	617.000	LT 20.000	2.200	....	....	1.100
05/27/87	RM LT 20.000	0.450	100.000	483.000	LT 20.000	0.970	....	....	0.580
06/03/87	RM 24.000	0.590	200.000	700.000	20.300	1.990	....	....	LT 0.200
06/10/87	RM 20.800	0.490	100.000	622.000	20.200	2.490	....	....	LT 0.200
06/17/87	RM LT 20.000	1.050	200.000	627.000	LT 20.000	2.550	....	....	LT 0.200
07/01/87	RM LT 20.000	0.800	100.000	490.000	LT 20.000	1.820	....	....	LT 0.200
07/08/87	RM LT 20.000	0.410	100.000	727.000	LT 20.000	0.550	....	....	LT 0.200
07/15/87	RM LT 20.000	0.820	100.000	734.000	LT 20.000	1.420	....	....	LT 0.200
07/22/87	RM LT 20.000	0.490	100.000	482.000	LT 20.000	1.510	....	....	LT 0.200
07/29/87	RM 25.100	0.920	100.000	720.000	LT 20.000	2.030	....	....	LT 0.200
08/05/87	ES 4.940	0.863	21.000	158.000	LT 3.340	0.804	LT 1.160	LT 16.300	0.833
08/12/87	ES ....	....	....	1300.000	....	....	....	LT 16.300	....
08/19/87	ES	1.030	362.000	....	....	4.370	....	LT 16.300	2.630
08/26/87	ES	1.080	268.000	1030.000	....	2.350	....	LT 16.300	2.670
09/02/87	ES 39.700	1.010	....	1350.000	26.100	LT 0.054	LT 1.160	LT 16.300	LT 0.060
09/09/87	ES	1.050	362.000	1220.000	....	1.630	....	LT 16.300	LT 0.060
09/23/87	ES	1.060	47.600	1330.000
09/30/87	ES 33.000	0.765	256.000	988.000	22.200	1.720	LT 1.160	0.706

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER A FOR FY87

SAMPLE DATE	ORG.	ETC6H5 ug/l	FLUORIDE mg/l	HCCPD ug/l	ISDOR ug/l	MEC6H5 ug/l	MIBK ug/l	M-XYLENE ug/l	OXAT ug/l	O,P-XYLENE ug/l
10/01/86 RM		....	4.700	....	LT 0.200	....	....	....	LT 20.000	....
10/08/86 RM		....	3.460	....	LT 0.200	....	....	....	LT 20.000	....
10/15/86 RM		....	4.000	....	0.340	....	....	....	LT 20.000	....
10/22/86 RM		....	4.190	....	LT 0.200	....	....	....	LT 20.000	....
10/29/86 RM		....	4.000	....	LT 0.200	....	....	....	LT 20.000	....
11/05/86 RM		....	3.630	....	LT 0.200	....	....	....	LT 20.000	....
11/12/86 RM		....	4.340	....	LT 0.200	....	....	....	LT 20.000	....
11/19/86 RM		....	4.110	....	LT 0.200	....	....	....	LT 20.000	....
11/26/86 RM		....	3.820	....	LT 0.200	....	....	....	LT 20.000	....
12/03/86 RM		....	4.360	....	LT 0.200	....	....	....	LT 20.000	....
12/10/86 RM		....	4.340	....	LT 0.200	....	....	....	LT 20.000	....
12/17/86 RM		....	4.310	....	LT 0.200	....	....	....	LT 20.000	....
12/31/86 RM		....	5.000	....	LT 0.200	....	....	....	LT 20.000	....
01/07/87 RM		....	2.930	....	LT 0.200	....	....	....	LT 20.000	....
01/14/87 RM		....	3.000	....	LT 0.200	....	....	....	LT 20.000	....
01/21/87 RM		....	3.770	....	LT 0.200	2.000	....	....	LT 20.000	....
01/28/87 RM		....	3.430	....	LT 0.200	1.000	....	....	LT 20.000	....
02/04/87 RM		....	3.310	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
02/11/87 RM		....	4.160	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
02/18/87 RM		....	3.260	....	LT 0.200	1.000	....	....	LT 20.000	....
02/25/87 RM		....	4.070	....	LT 0.200	2.000	....	....	LT 20.000	....
03/04/87 RM		....	3.800	....	LT 0.200	1.000	....	....	LT 20.000	....
03/11/87 RM		....	2.050	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
03/18/87 RM		....	3.270	....	LT 0.200	2.000	....	....	LT 20.000	....
3/25/87 RM		....	3.290	....	LT 0.200	3.000	....	....	LT 20.000	....
04/01/87 RM		....	3.740	....	LT 0.200	3.000	....	....	LT 20.000	....
04/08/87 RM		....	3.470	....	LT 0.200	3.000	....	....	LT 20.000	....
04/14/87 RM		....	2.960	....	LT 0.200	2.000	....	....	LT 20.000	....
04/22/87 RM		....	2.680	....	LT 0.200	3.000	....	....	LT 20.000	....
04/29/87 RM		....	3.940	....	LT 0.200	2.000	....	....	LT 20.000	....
05/06/87 RM		....	3.980	....	LT 0.200	2.000	....	....	LT 20.000	....
05/13/87 RM		....	3.730	....	LT 0.200	2.000	....	....	LT 20.000	....
05/27/87 RM		....	3.140	....	LT 0.200	2.000	....	....	LT 20.000	....
06/03/87 RM		....	3.310	....	LT 0.200	2.000	....	....	LT 20.000	....
06/10/87 RM		....	3.650	....	LT 0.200	3.000	....	....	LT 20.000	....
06/17/87 RM		....	3.210	....	LT 0.200	2.000	....	....	LT 20.000	....
07/01/87 RM		....	3.610	....	LT 0.200	1.000	....	....	LT 20.000	....
07/08/87 RM		....	3.090	....	LT 0.200	2.000	....	....	LT 20.000	....
07/15/87 RM		....	3.270	....	LT 0.200	3.000	....	....	LT 20.000	....
07/22/87 RM		....	2.840	....	LT 0.200	3.000	....	....	LT 20.000	....
07/29/87 RM		....	4.000	....	LT 0.200	1.000	....	....	LT 20.000	....
08/05/87 ES	LT	0.620	2.670	LT 0.083	LT 0.056	LT 2.100	LT 12.900	LT 1.040	LT 1.350	LT 1.340
08/12/87 ES	....	....	....	....	....	....	....	....	....	....
08/19/87 ES	....	....	3.600	LT 0.083	LT 0.056	....	LT 12.900	....	....	....
08/26/87 ES	....	....	3.580	0.471	LT 0.056	....	LT 12.900	....	....	....
09/02/87 ES	....	0.950	3.600	LT 0.083	LT 0.056	4.080	LT 12.900	LT 1.040	5.290	LT 1.340
09/09/87 ES	....	....	4.060	LT 0.083	LT 0.056	....	LT 12.900	....	....	....
09/23/87 ES	3.970	LT 12.900
09/30/87 ES	LT	0.620	3.590	0.581	LT 0.056	LT 2.100	LT 12.900	LT 1.040	4.620	LT 1.340

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER A FOR FY87

SAMPLE DATE	PPDE ORG.	PPDDT ug/l	SO4 mg/l	T12DCE ug/l	TCLEE ug/l	TRCLE ug/l
10/01/86 RM	LT 1.000
10/08/86 RM	LT 1.000
10/15/86 RM	LT 1.000
10/22/86 RM	LT 1.000
10/29/86 RM	LT 1.000
11/05/86 RM	LT 1.000
11/12/86 RM	LT 1.000
11/19/86 RM	LT 1.000
11/26/86 RM	LT 1.000
12/03/86 RM
12/10/86 RM
12/17/86 RM
12/31/86 RM
01/07/87 RM
01/14/87 RM	LT 1.000
01/21/87 RM	LT 1.000
01/28/87 RM	LT 1.000
02/04/87 RM	LT 1.000
02/11/87 RM	LT 1.000
02/18/87 RM	LT 1.000
02/25/87 RM	LT 1.000
03/04/87 RM	40.000	LT 1.000
03/11/87 RM	LT 1.000	LT 1.000
03/18/87 RM	70.000	LT 1.000
03/25/87 RM	30.000	LT 1.000
04/01/87 RM	40.000	6.000
04/08/87 RM	40.000	4.000
04/14/87 RM	40.000	7.000
04/22/87 RM	40.000	6.000
04/29/87 RM	40.000	4.000
05/06/87 RM	40.000	4.000
05/13/87 RM	40.000	8.000
05/27/87 RM	40.000	6.000
06/03/87 RM	40.000	9.000
06/10/87 RM	40.000	7.000
06/17/87 RM	40.000	6.000
07/01/87 RM	40.000	6.000
07/08/87 RM	40.000	6.000
07/15/87 RM	40.000	8.000
07/22/87 RM	40.000	4.000
07/29/87 RM	40.000	6.000
08/05/87 ES	LT 0.046	LT 0.059	451.000	LT 1.800	12.000	LT 1.300
08/12/87 ES
08/19/87	LT 0.046	LT 0.059	362.000	....	....	....
08/26/87 ES	LT 0.046	LT 0.059	371.000	....	....	....
09/02/87 ES	LT 0.046	LT 0.059	365.000	LT 1.800	40.000	5.400
09/09/87 ES	LT 0.046	LT 0.059	371.000
09/23/87 ES	365.000
09/30/87 ES	LT 0.046	0.265	295.000	LT 1.800	26.000	3.100

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mg/l = MILLIGRAM PER LITER

NORTH BOUNDARY TREATMENT PLANT - ADSORBER B FOR FY87

SAMPLE DATE	ORG.	111TCE ug/l	112TCE ug/l	11DCE ug/l	11DCLE ug/l	12DCE ug/l	12DCLE ug/l	ALDRN ug/l	AS ug/l	BTA ug/l							
10/01/86 RM		....	....	....	....	....	30.000	LT 0.200	....	....					
10/08/86 RM		....	....	....	....	....	10.000	LT 0.200	....	....					
10/15/86 RM		....	....	....	....	....	20.000	LT 0.200	....	....					
10/22/86 RM		....	....	....	....	....	8.000	LT 0.200	....	....					
10/29/86 RM		....	....	....	....	....	20.000	LT 0.200	....	....					
11/05/86 RM		....	....	....	....	....	10.000	LT 0.200	....	....					
11/12/86 RM		....	....	....	....	....	LT 1.000	LT 0.200	....	....					
11/19/86 RM		....	....	....	....	....	8.000	LT 0.200	....	....					
11/26/86 RM		....	....	....	....	....	20.000	LT 0.200	....	....					
12/03/86 RM		....	....	....	....	....	....	LT 0.200	....	....					
12/10/86 RM		....	....	....	....	....	....	LT 0.200	....	....					
12/17/86 RM		....	....	....	....	....	....	LT 0.200	....	....					
12/31/86 RM		....	....	....	....	....	....	LT 0.200	....	....					
01/07/87 RM		....	....	....	....	....	....	LT 0.200	....	....					
01/14/87 RM		....	....	....	....	....	20.000	LT 0.200	....	....					
01/21/87 RM		....	....	....	....	....	LT 1.000	LT 0.200	....	....					
01/28/87 RM		....	....	....	....	....	LT 1.000	LT 0.200	....	....					
02/04/87 RM		....	....	....	....	....	20.000	LT 0.200	....	....					
02/11/87 RM		....	....	....	....	....	LT 1.000	LT 0.200	....	....					
02/18/87 RM		....	....	....	....	....	20.000	LT 0.200	....	....					
02/25/87 RM		....	....	....	....	....	10.000	LT 0.200	....	....					
03/04/87 RM		....	....	....	....	....	20.000	LT 0.200	....	....					
03/11/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
03/18/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
3/25/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
04/01/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
04/08/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
04/14/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
04/22/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
04/29/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
05/06/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
05/13/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
05/27/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
06/03/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
06/10/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
06/17/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
07/01/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
07/08/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
07/15/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
07/22/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
07/29/87 RM		....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....					
08/05/87 ES		....	....	....	....	....	....	....	....	....
08/12/87 ES		....	....	....	....	....	....	....	....	....
08/19/87 ES		....	....	....	....	....	....	LT 0.083	....	....					
08/26/87 ES		....	....	....	....	....	....	LT 0.083	....	....					
09/02/87 ES	LT	1.090	LT	1.630	LT	1.850	LT	2.070	LT	0.083	LT	2.500	LT	1.100			
09/09/87 ES		LT 0.083			
09/23/87 ES				
09/30/87 ES	LT	1.090	LT	1.630	LT	1.850	LT	1.930	LT	2.070	LT	0.083	LT	2.500	LT	1.100

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER B FOR FY87

SAMPLE DATE	ORG.	C6H6 ug/l	CCL4 ug/l	CH2CL2 ug/l	CHCL3 ug/l	CHLORIDE mg/l	CLC6H5 ug/l	CLDAN ug/l	CPMS ug/l	CPMSO ug/l
10/01/86 RM		....	LT 1.000	....	80.000	114.000	....	....	LT 20.000	LT 20.000
10/08/86 RM		....	LT 1.000	....	LT 1.000	92.100	....	....	LT 20.000	LT 20.000
10/15/86 RM		....	LT 1.000	....	30.000	116.000	....	....	LT 20.000	LT 20.000
10/22/86 RM		....	LT 1.000	....	LT 1.000	111.000	....	....	LT 20.000	LT 20.000
10/29/86 RM		....	LT 1.000	....	30.000	123.000	....	....	LT 20.000	LT 20.000
11/05/86 RM		....	LT 1.000	....	LT 1.000	117.000	....	....	LT 20.000	LT 20.000
11/12/86 RM		....	10.000	....	LT 1.000	110.000	....	....	LT 20.000	LT 20.000
11/19/86 RM		....	LT 1.000	....	LT 1.000	117.000	....	....	LT 20.000	LT 20.000
11/26/86 RM		....	LT 1.000	....	40.000	123.000	....	....	LT 20.000	LT 20.000
12/03/86 RM		....	....	....	....	111.000	....	....	LT 20.000	LT 20.000
12/10/86 RM		....	....	....	....	109.000	....	....	LT 20.000	LT 20.000
12/17/86 RM		....	....	....	....	117.000	....	....	LT 20.000	LT 20.000
12/31/86 RM		....	....	....	....	117.000	....	....	LT 20.000	LT 20.000
01/07/87 RM		....	....	....	....	129.000	....	....	LT 20.000	LT 20.000
01/14/87 RM		....	LT 1.000	....	LT 1.000	120.000	....	....	LT 20.000	LT 20.000
01/21/87 RM		....	LT 1.000	....	20.000	119.000	....	....	LT 20.000	LT 20.000
01/28/87 RM		....	LT 1.000	....	10.000	115.000	....	....	LT 20.000	LT 20.000
02/04/87 RM		....	LT 1.000	....	LT 1.000	129.000	....	....	LT 20.000	LT 20.000
02/11/87 RM		....	LT 1.000	....	7.000	185.000	....	....	LT 20.000	LT 20.000
02/18/87 RM		....	LT 1.000	....	LT 1.000	132.000	....	....	LT 20.000	LT 20.000
02/25/87 RM		....	LT 1.000	....	LT 1.000	125.000	....	....	LT 20.000	LT 20.000
03/04/87 RM		....	LT 1.000	....	LT 1.000	156.000	....	....	LT 20.000	28.600
03/11/87 RM		....	LT 1.000	....	20.000	152.000	....	....	LT 20.000	30.000
03/18/87 RM		....	LT 1.000	....	20.000	155.000	....	....	LT 20.000	LT 20.0
03/25/87 RM		....	10.000	....	20.000	150.000	....	....	LT 20.000	24.10
04/01/87 RM		....	LT 1.000	....	20.000	143.000	....	....	LT 20.000	21.100
04/08/87 RM		....	LT 1.000	....	50.000	133.000	....	....	LT 20.000	21.200
04/14/87 RM		....	10.000	....	20.000	178.000	....	....	LT 20.000	LT 20.000
04/22/87 RM		....	10.000	....	20.000	157.000	....	....	LT 20.000	LT 20.000
04/29/87 RM		....	10.000	....	20.000	136.000	....	....	LT 20.000	LT 20.000
05/06/87 RM		....	LT 1.000	....	20.000	151.000	....	....	LT 20.000	LT 20.000
05/13/87 RM		....	10.000	....	20.000	182.000	....	....	LT 20.000	LT 20.000
05/27/87 RM		....	10.000	....	20.000	200.000	....	....	LT 20.000	LT 20.000
06/03/87 RM		....	LT 1.000	....	20.000	151.000	....	....	LT 20.000	LT 20.000
06/10/87 RM		....	10.000	....	20.000	200.000	....	....	LT 20.000	LT 20.000
06/17/87 RM		....	10.000	....	20.000	200.000	....	....	LT 20.000	LT 20.000
07/01/87 RM		....	LT 1.000	....	20.000	156.000	....	....	LT 20.000	LT 20.000
07/08/87 RM		....	LT 1.000	....	20.000	200.000	....	....	LT 20.000	LT 20.000
07/15/87 RM		....	10.000	....	20.000	176.000	....	....	LT 20.000	LT 20.000
07/22/87 RM		....	20.000	....	20.000	161.000	....	....	LT 20.000	LT 20.000
07/29/87 RM		....	10.000	....	20.000	123.000	....	....	LT 20.000	LT 20.000
08/05/87 ES		....	....	....	....	....	....	....	....	....
08/12/87 ES		....	....	....	....	148.000	....	....	....	....
08/19/87 ES		....	....	....	....	119.000	....	LT 0.152	....	....
08/26/87 ES		....	....	....	....	109.000	....	LT 0.152	....	....
09/02/87 ES	LT 1.920	LT 1.690	LT 2.480	28.900	145.000	LT 1.360	LT 0.152	3.900	19.100	
09/09/87 ES	....	....	....	....	140.000	....	LT 0.152	....	....
09/23/87 ES	135.000	
09/30/87 ES	LT 1.920	LT 1.690	LT 2.480	16.400	109.000	LT 1.360	LT 0.152	3.810	23.400	

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER B FOR FY87

SAMPLE DATE	ORG.	CPHSO2 ug/l	D8CP ug/l	DCPD ug/l	DIMP ug/l	DITH ug/l	DLDRM ug/l	DMDS ug/l	DMMP ug/l	ENDRN ug/l
10/01/86	RM	LT 20.000	0.710	LT 1.000	68.900	LT 20.000	0.840	....	....	0.510
10/08/86	RM	LT 20.000	1.110	LT 1.000	66.200	LT 20.000	0.500	....	....	0.310
10/15/86	RM	LT 20.000	1.400	LT 1.000	63.500	LT 20.000	0.800	....	....	0.510
10/22/86	RM	LT 20.000	0.740	LT 1.000	65.200	LT 20.000	0.670	....	....	0.420
10/29/86	RM	LT 20.000	1.440	LT 1.000	70.500	LT 20.000	1.280	....	....	0.840
11/05/86	RM	LT 20.000	0.630	LT 1.000	72.300	LT 20.000	0.680	....	....	0.440
11/12/86	RM	LT 20.000	0.870	LT 1.000	69.400	LT 20.000	0.670	....	....	0.460
11/19/86	RM	LT 20.000	0.820	LT 1.000	72.200	LT 20.000	0.660	....	....	0.450
11/26/86	RM	LT 20.000	0.730	LT 1.000	61.900	LT 20.000	0.530	....	....	0.370
12/03/86	RM	LT 20.000	0.770	....	54.800	LT 20.000	0.640	....	....	0.430
12/10/86	RM	LT 20.000	0.890	....	63.800	LT 20.000	0.860	....	....	0.570
12/17/86	RM	LT 20.000	0.940	....	65.600	LT 20.000	0.850	....	....	0.570
12/31/86	RM	LT 20.000	1.120	....	73.500	LT 20.000	0.670	....	....	0.460
01/07/87	RM	LT 20.000	0.940	....	70.500	LT 20.000	0.340	....	....	0.290
01/14/87	RM	LT 20.000	0.780	LT 1.000	61.110	LT 20.000	0.690	....	....	0.540
01/21/87	RM	LT 20.000	0.560	3.000	60.200	LT 20.000	0.520	....	....	0.420
01/28/87	RM	LT 20.000	0.890	LT 1.000	64.300	LT 20.000	0.690	....	....	0.490
02/04/87	RM	LT 20.000	0.880	LT 1.000	75.900	LT 20.000	0.400	....	....	0.260
02/11/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
02/18/87	RM	LT 20.000	1.030	2.000	104.000	LT 20.000	0.360	....	....	0.230
02/25/87	RM	LT 20.000	1.140	LT 1.000	102.000	LT 20.000	0.550	....	....	0.340
03/04/87	RM	LT 20.000	1.450	1.000	122.000	LT 20.000	0.128	....	....	0.850
03/11/87	RM	LT 20.000	0.980	LT 1.000	111.000	LT 20.000	0.630	....	....	0.420
03/18/87	RM	LT 20.000	0.580	LT 1.000	84.700	LT 20.000	0.350	....	....	0.220
3/25/87	RM	LT 20.000	1.060	30.000	94.800	LT 20.000	0.710	....	....	0.420
04/01/87	RM	LT 20.000	0.840	20.000	96.000	LT 20.000	0.640	....	....	0.510
04/08/87	RM	LT 20.000	0.560	20.000	96.700	LT 20.000	0.770	....	....	0.490
04/14/87	RM	LT 20.000	1.380	30.000	103.000	LT 20.000	2.020	....	....	1.840
04/22/87	RM	LT 20.000	0.900	20.000	89.100	LT 20.000	0.750	....	....	0.610
04/29/87	RM	LT 20.000	0.810	20.000	91.500	LT 20.000	0.800	....	....	0.610
05/06/87	RM	LT 20.000	2.340	30.000	83.800	LT 20.000	1.210	....	....	0.930
05/13/87	RM	LT 20.000	0.970	30.000	109.000	LT 20.000	0.850	....	....	0.560
05/27/87	RM	LT 20.000	1.070	30.000	104.000	LT 20.000	0.760	....	....	0.610
06/03/87	RM	LT 20.000	0.880	20.000	100.000	LT 20.000	0.840	....	....	0.670
06/10/87	RM	LT 20.000	1.030	30.000	94.500	LT 20.000	0.580	....	....	0.420
06/17/87	RM	LT 20.000	1.130	40.000	94.100	LT 20.000	1.320	....	....	1.150
07/01/87	RM	LT 20.000	0.900	30.000	89.200	LT 20.000	0.990	....	....	0.600
07/08/87	RM	LT 20.000	1.010	30.000	88.600	LT 20.000	0.800	....	....	0.470
07/15/87	RM	LT 20.000	0.960	30.000	121.000	LT 20.000	0.810	....	....	0.640
07/22/87	RM	LT 20.000	0.640	20.000	106.000	LT 20.000	0.880	....	....	0.490
07/29/87	RM	LT 20.000	0.880	30.000	108.000	LT 20.000	0.830	....	....	0.510
08/05/87	ES	....	....	....	....	....	....	....	....	....
08/12/87	ES	....	....	20.400	174.000	....	....	....	LT 1.630	0.972
08/19/87	ES	....	1.120	LT 9.310	....	....	0.200	....	LT 1.630	0.137
08/26/87	ES	....	0.841	LT 9.310	96.000	....	0.555	....	LT 1.630	0.471
09/02/87	ES	5.200	1.030	21.500	143.000	LT 3.340	LT 0.054	LT 1.160	LT 1.630	LT 0.060
09/09/87	ES	....	1.170	14.100	170.000	....	1.110	....	LT 1.630	0.710
09/23/87	ES	1.060	17.300	176.000	LT 1.630
09/30/87	ES	6.150	1.150	15.300	10.600	LT 3.340	1.290	LT 1.160	LT 1.630	0.750

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER 8 FOR FY87

SAMPLE DATE	ORG.	ETC6H5 ug/l	FLUORIDE mg/l	HCCPD ug/l	ISDOR ug/l	MEC6H5 ug/l	MIBK ug/l	M-XYLENE ug/l	OXAT ug/l	O,P-XYLL ug/l
10/11/86	RM	....	3.200	....	LT 0.200	....	....	....	LT 20.000	....
10/08/86	RM	....	3.490	....	LT 0.200	....	....	....	LT 20.000	....
10/15/86	RM	....	1.200	....	LT 0.200	....	....	....	LT 20.000	....
10/22/86	RM	....	3.120	....	LT 0.200	....	....	....	LT 20.000	....
10/29/86	RM	....	3.090	....	LT 0.200	....	....	....	LT 20.000	....
11/05/86	RM	....	3.760	....	LT 0.200	....	....	....	LT 20.000	....
11/12/86	RM	....	3.770	....	LT 0.200	....	....	....	LT 20.000	....
11/19/86	RM	....	2.910	....	LT 0.200	....	....	....	LT 20.000	....
11/26/86	RM	....	3.540	....	LT 0.200	....	....	....	LT 20.000	....
12/03/86	RM	....	3.290	....	LT 0.200	....	....	....	LT 20.000	....
12/10/86	RM	....	3.210	....	LT 0.200	....	....	....	LT 20.000	....
12/17/86	RM	....	3.210	....	LT 0.200	....	....	....	LT 20.000	....
12/31/86	RM	....	4.000	....	LT 0.200	....	....	....	LT 20.000	....
01/07/87	RM	....	3.240	....	LT 0.200	....	....	....	LT 20.000	....
01/14/87	RM	....	4.000	....	LT 0.200	....	....	....	LT 20.000	....
01/21/87	RM	....	4.330	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
01/28/87	RM	....	2.690	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
02/04/87	RM	....	2.940	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
02/11/87	RM	....	2.180	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
02/18/87	RM	....	2.650	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
02/25/87	RM	....	3.040	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
03/04/87	RM	....	2.990	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
03/11/87	RM	....	2.340	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
03/18/87	RM	....	2.710	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
03/25/87	RM	....	2.660	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
04/01/87	RM	....	2.810	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
04/08/87	RM	....	2.790	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
04/14/87	RM	....	2.560	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
04/22/87	RM	....	2.560	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
04/29/87	RM	....	2.940	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
05/06/87	RM	....	2.430	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
05/13/87	RM	....	2.960	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
05/27/87	RM	....	2.920	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
06/03/87	RM	....	2.730	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
06/10/87	RM	....	2.970	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
06/17/87	RM	....	2.930	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
07/01/87	RM	....	2.800	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
07/08/87	RM	....	3.040	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
07/15/87	RM	....	2.950	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
07/22/87	RM	....	2.990	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
07/29/87	RM	....	3.000	....	LT 0.200	LT 1.00	....	....	LT 20.000	....
08/05/87	ES	....	....	....	....	....	....	....	....	....
08/12/87	ES	....	....	....	....	....	....	....	....	....
08/19/87	ES	....	2.610	LT 0.083	LT 0.056	....	LT 12.9	....	....	....
08/26/87	ES	....	2.410	LT 0.083	LT 0.056	....	LT 12.9	....	....	....
09/02/87	ES	LT 0.620	2.540	LT 0.083	LT 0.056	LT 2.10	LT 12.9	LT 1.040	LT 1.350	LT 1.340
09/09/87	ES	....	2.570	LT 0.083	LT 0.056	....	LT 12.9	....	....	....
09/23/87	ES	2.600	LT 12.9
09/30/87	ES	LT 0.620	2.360	LT 0.083	LT 0.056	LT 2.10	LT 12.9	LT 1.040	LT 1.350	LT 1.340

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER B FOR FY87

SAMPLE DATE	ORG.	PP00E ug/l	PP00T ug/l	SO4 mg/l	T120CE ug/l	TCLEE ug/l	TRCLE ug/l
10/01/86	RM	....	....	....	....	....	LT 1.000
10/08/86	RM	....	....	....	....	....	LT 1.000
10/15/86	RM	....	....	....	....	....	LT 1.000
10/22/86	RM	....	....	....	....	....	LT 1.000
10/29/86	RM	....	....	....	....	....	LT 1.000
11/05/86	RM	....	....	....	....	....	LT 1.000
11/12/86	RM	....	....	....	....	....	LT 1.000
11/19/86	RM	....	....	....	....	....	LT 1.000
11/26/86	RM	....	....	....	....	....	LT 1.000
12/03/86	RM	....	....	....	....	....	....
12/10/86	RM	....	....	....	....	....	....
12/17/86	RM	....	....	....	....	....	....
12/31/86	RM	....	....	....	....	....	....
01/07/87	RM	....	....	....	....	....	....
01/14/87	RM	....	....	....	....	....	LT 1.000
01/21/87	RM	....	....	....	....	....	LT 1.000
01/28/87	RM	....	....	....	....	....	LT 1.000
02/04/87	RM	....	....	....	....	....	LT 1.000
02/11/87	RM	....	....	....	....	....	LT 1.000
02/18/87	RM	....	....	....	....	....	LT 1.000
02/25/87	RM	....	....	....	....	....	LT 1.000
03/04/87	RM	....	....	....	....	20.000	LT 1.000
03/11/87	RM	....	....	....	....	LT 1.000	LT 1.000
03/18/87	RM	....	....	....	....	5.000	LT 1.000
03/25/87	RM	....	....	....	....	20.000	LT 1.000
04/01/87	RM	....	....	....	....	20.000	LT 1.000
04/08/87	RM	....	....	....	....	10.000	3.000
04/14/87	RM	....	....	....	....	20.000	5.000
04/22/87	RM	....	....	....	....	20.000	LT 1.000
04/29/87	RM	....	....	....	....	20.000	3.000
05/06/87	RM	....	....	....	....	20.000	3.000
05/13/87	RM	....	....	....	....	20.000	LT 1.000
05/27/87	RM	....	....	....	....	20.000	2.000
06/03/87	RM	....	....	....	....	10.000	LT 1.000
06/10/87	RM	....	....	....	....	20.000	LT 1.000
06/17/87	RM	....	....	....	....	20.000	3.000
07/01/87	RM	....	....	....	....	20.000	4.000
07/08/87	RM	....	....	....	....	20.000	5.000
07/15/87	RM	....	....	....	....	20.000	LT 1.000
07/22/87	RM	....	....	....	....	20.000	4.000
07/29/87	RM	....	....	....	....	20.000	4.000
08/05/87	ES	....	....	....	....	....	....
08/12/87	ES	....	....	....	....	....	....
08/19/87	ES	LT 0.046	LT 0.059	481.000	....	....	....
08/26/87	ES	LT 0.046	LT 0.059	407.000	....	....	....
09/02/87	ES	LT 0.046	LT 0.059	421.000	LT 1.800	13.000	LT 1.300
09/09/87	ES	LT 0.046	LT 0.059	466.000
09/23/87	ES	452.000
09/30/87	ES	LT 0.046	LT 0.059	364.000	LT 1.800	11.000	LT 1.300

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER C FOR FY87

SAMPLE DATE	ORG.	111TCE ug/l	112TCE ug/l	11DCE ug/l	11DCLE ug/l	12DCE ug/l	12DCLE ug/l	ALDRN ug/l	AS ug/l	B. ug/l
10/01/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
10/08/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
10/15/86	RM	....	....	....	....	....	7.000	LT 0.200	....	....
10/22/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
10/29/86	RM	....	....	....	....	....	50.000	LT 0.200	....	....
11/05/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
11/12/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
11/19/86	RM	....	....	....	....	....	3.000	LT 0.200	....	....
11/26/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
12/03/86	RM	....	....	....	....	....	....	LT 0.200	....	....
12/10/86	RM	....	....	....	....	....	....	LT 0.200	....	....
12/17/86	RM	....	....	....	....	....	....	LT 0.200	....	....
12/31/86	RM	....	....	....	....	....	....	LT 0.200	....	....
01/07/87	RM	....	....	....	....	....	....	LT 0.200	....	....
01/14/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
01/21/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
01/28/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
02/04/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
02/11/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
02/18/87	RM	....	....	....	....	....	5.000	LT 0.200	....	....
02/25/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
03/04/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
03/11/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
03/18/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
03/25/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/01/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/08/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/14/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/22/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/29/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
05/06/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
05/13/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
05/27/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
06/03/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
06/10/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
06/17/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/01/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/08/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/15/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/22/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/29/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
08/05/87	ES	LT 1.090	LT 1.630	LT 1.850	LT 1.930	....	LT 2.070	LT 0.083	LT 2.500	LT 1.100
08/12/87	ES	....	....	....	....	....	....	....	....	....
08/19/87	ES	....	....	....	....	....	....	LT 0.083	....	....
08/26/87	ES	....	....	....	....	....	....	LT 0.083	....	....
09/02/87	ES	LT 1.090	LT 1.630	LT 1.850	LT 1.930	....	LT 2.070	LT 0.083	LT 2.500	LT 1.100
09/09/87	ES	....	....	....	....	....	....	LT 0.083	....	....
09/23/87	ES	....	....	....	....	....	....	....	....	....
09/30/87	ES	LT 1.090	LT 1.630	LT 1.850	LT 1.930	....	LT 2.070	LT 0.083	LT 2.500	LT 1.100

LT = LESS THAN The Following Concentration

.... INDICATES THAT ANALYSIS WAS NOT PERFORMED

ug/l = MICROGRAM PER LITER

mg/l = MILLIGRAM PER LITER

NORTH BOUNDARY TREATMENT PLANT - ADSORBER C FOR FY87

SAMPLE DATE	ORG.	C6H6 ug/l	CCL4 ug/l	CH2CL2 ug/l	CHCL3 ug/l	CHLORIDE mg/l	CLC6H5 ug/l	CLDAN ug/l	CPMS ug/l	CPMSO ug/l
10/01/86	RM	....	LT 1.000	....	LT 1.000	127.000	....	....	LT 20.000	LT 20.000
10/08/86	RM	....	LT 1.000	....	LT 1.000	204.000	....	....	LT 20.000	LT 20.000
10/15/86	RM	....	LT 1.000	....	LT 1.000	130.000	....	....	LT 20.000	LT 20.000
10/22/86	RM	....	LT 1.000	....	2.000	124.000	....	....	LT 20.000	LT 20.000
10/29/86	RM	....	LT 1.000	....	LT 1.000	134.000	....	....	LT 20.000	LT 20.000
11/05/86	RM	....	LT 1.000	....	LT 1.000	128.000	....	....	LT 20.000	LT 20.000
11/12/86	RM	....	LT 1.000	....	LT 1.000	100.000	....	....	LT 20.000	LT 20.000
11/19/86	RM	....	LT 1.000	....	LT 1.000	126.000	....	....	LT 20.000	LT 20.000
11/26/86	RM	....	LT 1.000	....	4.000	144.000	....	....	LT 20.000	LT 20.000
12/03/86	RM	....	....	....	....	119.000	....	....	LT 20.000	LT 20.000
12/10/86	RM	....	....	....	....	113.000	....	....	LT 20.000	LT 20.000
12/17/86	RM	....	....	....	....	117.000	....	....	LT 20.000	LT 20.000
12/31/86	RM	....	....	....	....	115.000	....	....	LT 20.000	LT 20.000
01/07/87	RM	....	....	....	....	214.000	....	....	LT 20.000	LT 20.000
01/14/87	RM	....	LT 1.000	....	LT 1.000	120.000	....	....	LT 20.000	LT 20.000
01/21/87	RM	....	LT 1.000	....	LT 1.000	113.000	....	....	LT 20.000	LT 20.000
01/28/87	RM	....	LT 1.000	....	LT 1.000	115.000	....	....	LT 20.000	LT 20.000
02/04/87	RM	....	LT 1.000	....	LT 1.000	121.000	....	....	LT 20.000	LT 20.000
02/11/87	RM	....	LT 1.000	....	LT 1.000	117.000	....	....	LT 20.000	LT 20.000
02/18/87	RM	....	LT 1.000	....	LT 1.000	133.000	....	....	LT 20.000	LT 20.000
02/25/87	RM	....	LT 1.000	....	LT 1.000	121.000	....	....	LT 20.000	LT 20.000
03/04/87	RM	....	LT 1.000	....	LT 1.000	126.000	....	....	LT 20.000	LT 20.000
03/11/87	RM	....	LT 1.000	....	20.000	109.000	....	....	LT 20.000	LT 20.000
03/18/87	RM	....	LT 1.000	....	LT 1.000	110.000	....	....	LT 20.000	LT 20.000
3/25/87	RM	....	LT 1.000	....	LT 1.000	131.000	....	....	LT 20.000	LT 20.000
4/01/87	RM	....	LT 1.000	....	LT 1.000	102.000	....	....	LT 20.000	LT 20.000
04/08/87	RM	....	LT 1.000	....	LT 1.000	112.000	....	....	LT 20.000	LT 20.000
04/14/87	RM	....	LT 1.000	....	LT 1.000	147.000	....	....	LT 20.000	LT 20.000
04/22/87	RM	....	LT 1.000	....	LT 1.000	128.000	....	....	LT 20.000	LT 20.000
04/29/87	RM	....	LT 1.000	....	LT 1.000	110.000	....	....	LT 20.000	LT 20.000
05/06/87	RM	....	LT 1.000	....	LT 1.000	127.000	....	....	LT 20.000	LT 20.000
05/13/87	RM	....	LT 1.000	....	LT 1.000	128.000	....	....	LT 20.000	LT 20.000
05/27/87	RM	....	LT 1.000	....	8.000	100.000	....	....	LT 20.000	LT 20.000
06/03/87	RM	....	LT 1.000	....	LT 1.000	114.000	....	....	LT 20.000	LT 20.000
06/10/87	RM	....	LT 1.000	....	60.000	100.000	....	....	LT 20.000	LT 20.000
06/17/87	RM	....	LT 1.000	....	LT 1.000	100.000	....	....	LT 20.000	LT 20.000
07/01/87	RM	....	LT 1.000	....	LT 1.000	117.000	....	....	LT 20.000	LT 20.000
07/08/87	RM	....	LT 1.000	....	LT 1.000	100.000	....	....	LT 20.000	LT 20.000
07/15/87	RM	....	LT 1.000	....	LT 1.000	119.000	....	....	LT 20.000	LT 20.000
07/22/87	RM	....	LT 1.000	....	LT 1.000	103.000	....	....	LT 20.000	LT 20.000
07/29/87	RM	....	LT 1.000	....	4.000	582.000	....	....	LT 20.000	LT 20.000
08/05/87	ES	LT 1.920	2.330	LT 2.480	LT 1.880	941.000	LT 1.360	LT 0.152	LT 1.080	LT 1.980
08/12/87	ES	....	....	....	....	....	....	....	....	....
08/19/87	ES	....	....	....	....	105.000	....	LT 0.152	....	....
08/26/87	ES	....	....	....	....	103.000	....	LT 0.152	....	....
09/02/87	ES	LT 1.920	2.740	LT 2.480	LT 1.880	110.000	LT 1.360	LT 0.152	LT 1.080	LT 1.980
09/09/87	ES	....	....	....	....	995.000	....	LT 0.152	....	....
09/23/87	ES	....	....	....	....	959.000	....	....	....	....
09/30/87	ES	LT 1.920	2.790	LT 2.480	LT 1.880	811.000	LT 1.360	LT 0.152	LT 1.080	LT 1.980

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mg/l = MILLIGRAM PER LITER

NORTH BOUNDARY TREATMENT PLANT - ADSORBER C FOR FY87

SAMPLE DATE	ORG.	CPHSO2 ug/l	DBCP ug/l	DCPD ug/l	DIMP ug/l	DITH ug/l	DLDRM ug/l	DMDS ug/l	DMMP ug/l	ENL ug/l
10/01/86	RM	....	0.320	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
10/08/86	RM	LT 20.000	0.410	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
10/15/86	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	0.310	....	....	LT 0.200
10/22/86	RM	LT 20.000	0.310	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
10/29/86	RM	LT 20.000	0.470	LT 1.000	LT 10.000	LT 20.000	0.260	....	....	LT 0.200
11/05/86	RM	LT 20.000	0.250	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
11/12/86	RM	LT 20.000	0.340	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
11/19/86	RM	LT 20.000	0.300	LT 1.000	LT 10.000	LT 20.000	0.200	....	....	LT 0.200
11/26/86	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
12/03/86	RM	LT 20.000	0.310	....	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
12/10/86	RM	LT 20.000	0.450	....	LT 10.000	LT 20.000	0.240	....	....	LT 0.200
12/17/86	RM	LT 20.000	0.400	....	LT 10.000	LT 20.000	0.270	....	....	LT 0.200
12/31/86	RM	LT 20.000	LT 0.200	....	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
01/07/87	RM	LT 20.000	0.290	....	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
01/14/87	RM	LT 20.000	0.290	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
01/21/87	RM	LT 20.000	LT 0.200	4.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
01/28/87	RM	LT 20.000	0.320	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
02/04/87	RM	LT 20.000	0.260	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
02/11/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
02/18/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
02/25/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
03/04/87	RM	LT 20.000	LT 0.200	2.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
03/11/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
03/18/87	RM	LT 20.000	0.260	LT 1.000	LT 10.000	LT 20.000	0.200	....	....	LT 0.200
03/25/87	RM	LT 20.000	LT 0.200	2.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
04/01/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
04/08/87	RM	LT 20.000	LT 0.200	7.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
04/14/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	0.410	....	....	LT 0.200
04/22/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
04/29/87	RM	LT 20.000	LT 0.200	1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
05/06/87	RM	LT 20.000	0.450	1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
05/13/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
05/27/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
06/03/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
06/10/87	RM	LT 20.000	0.250	LT 1.000	LT 10.000	LT 20.000	0.370	....	....	LT 0.200
06/17/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
07/01/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
07/08/87	RM	LT 20.000	LT 0.200	2.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
07/15/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
07/22/87	RM	LT 20.000	LT 0.200	4.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
07/29/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
08/05/87	ES	3.320	0.204	LT 9.310	13.500	LT 3.340	0.122	LT 1.16	LT 16.300	0.080
08/12/87	ES	....	....	....	LT 10.100	....	....	....	LT 16.300	....
08/19/87	ES	....	0.247	LT 9.310	....	....	LT 0.540	....	....	LT 0.060
08/26/87	ES	....	0.228	LT 9.310	LT 10.100	....	0.013	....	LT 16.300	0.063
09/02/87	ES	4.490	0.232	LT 9.310	13.500	LT 3.340	0.121	LT 1.16	LT 16.300	LT 0.060
09/09/87	ES	....	0.227	LT 9.310	LT 10.100	....	0.109	....	LT 16.300	LT 0.060
09/23/87	ES	0.212	LT 9.310	LT 10.100	LT 16.300
09/30/87	ES	4.610	0.190	LT 9.310	LT 10.100	LT 3.340	0.107	LT 1.16	LT 16.300	LT 0.060

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER C FOR FY87

SAMPLE DATE	ORG.	ETC6HS ug/l	FLUORIDE mg/l	HCCPD ug/l	ISOR ug/l	MEC6HS ug/l	MIBK ug/l	M-XYLENE ug/l	OXAT ug/l	O,P-XYLENE ug/l
10/01/86	RM	....	2.050	....	LT 0.200	....	....	....	LT 20.000	....
10/08/86	RM	....	1.890	....	LT 0.200	....	....	....	LT 20.000	....
10/15/86	RM	....	1.600	....	LT 0.200	....	....	....	LT 20.000	....
10/22/86	RM	....	1.730	....	LT 0.200	....	....	....	LT 20.000	....
10/29/86	RM	....	1.670	....	LT 0.200	....	....	....	LT 20.000	....
11/05/86	RM	....	1.930	....	LT 0.200	....	....	....	LT 20.000	....
11/12/86	RM	....	1.950	....	LT 0.200	....	....	....	LT 20.000	....
11/19/86	RM	....	1.590	....	LT 0.200	....	....	....	LT 20.000	....
11/26/86	RM	....	2.050	....	LT 0.200	....	....	....	LT 20.000	....
12/03/86	RM	....	2.050	....	LT 0.200	....	....	....	LT 20.000	....
12/10/86	RM	....	2.120	....	LT 0.200	....	....	....	LT 20.000	....
12/17/86	RM	....	1.940	....	LT 0.200	....	....	....	LT 20.000	....
12/31/86	RM	....	2.000	....	LT 0.200	....	....	....	LT 20.000	....
01/07/87	RM	....	1.750	....	LT 0.200	....	....	....	LT 20.000	....
01/14/87	RM	....	2.000	....	LT 0.200	....	....	....	LT 20.000	....
01/21/87	RM	....	1.260	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
01/28/87	RM	....	1.390	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
02/04/87	RM	....	1.560	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
02/11/87	RM	....	1.570	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
02/18/87	RM	....	1.380	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
02/25/87	RM	....	1.790	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
03/04/87	RM	....	1.790	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
03/11/87	RM	....	1.940	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
03/18/87	RM	....	1.650	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
03/25/87	RM	....	1.650	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
04/01/87	RM	....	1.660	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
04/08/87	RM	....	1.410	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
04/14/87	RM	....	1.170	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
04/22/87	RM	....	1.300	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
04/29/87	RM	....	1.680	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
05/06/87	RM	....	1.770	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
05/13/87	RM	....	1.720	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
05/27/87	RM	....	1.830	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
06/03/87	RM	....	1.730	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
06/10/87	RM	....	1.940	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
06/17/87	RM	....	1.780	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
07/01/87	RM	....	1.820	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
07/08/87	RM	....	1.720	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
07/15/87	RM	....	0.940	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
07/22/87	RM	....	1.510	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
07/29/87	RM	....	2.000	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
08/05/87	ES	....	1.760	LT 0.083	LT 0.056	LT 2.100	LT 12.900	LT 1.040	LT 1.350	LT 1.340
08/12/87	ES	....	....	....	....	....	....	....	....	....
08/19/87	ES	....	1.640	LT 0.083	LT 0.056	....	LT 12.900	....	....	....
08/26/87	ES	....	1.470	LT 0.083	LT 0.056	....	LT 12.900	....	....	....
09/02/87	ES	LT 0.620	1.570	LT 0.083	LT 0.056	LT 2.100	LT 12.900	LT 1.040	LT 1.350	LT 1.340
09/09/87	ES	....	1.610	LT 0.083	LT 0.056	....	LT 12.900	....	....	....
09/23/87	ES	....	1.690	....	....	....	LT 12.900	....	....	....
09/30/87	ES	LT 0.620	1.530	LT 0.083	LT 0.056	LT 2.100	LT 12.900	LT 1.040	LT 1.350	LT 1.340

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NORTH BOUNDARY TREATMENT PLANT - ADSORBER C FOR FY87

SAMPLE DATE	ORG.	PPDDE ug/l	PPDDT ug/l	SO4 mg/l	T12DCE ug/l	TCLEE ug/l	TRCLE ug/l
10/01/86	RM	....	....	....	....	....	LT 1.000
10/08/86	RM	....	....	....	....	....	LT 1.000
10/15/86	RM	....	....	....	....	....	LT 1.000
10/22/86	RM	....	....	....	....	....	LT 1.000
10/29/86	RM	....	....	....	....	....	LT 1.000
11/05/86	RM	....	....	....	....	....	LT 1.000
11/12/86	RM	....	....	....	....	....	LT 1.000
11/19/86	RM	....	....	....	....	....	LT 1.000
11/26/86	RM	....	....	....	....	....	LT 1.000
12/03/86	RM	....	....	....	....	....	....
12/10/86	RM	....	....	....	....	....	....
12/17/86	RM	....	....	....	....	....	....
12/31/86	RM	....	....	....	....	....	....
01/07/87	RM	....	....	....	....	....	....
01/14/87	RM	....	....	....	....	....	LT 1.000
01/21/87	RM	....	....	....	....	....	LT 1.000
01/28/87	RM	....	....	....	....	....	LT 1.000
02/04/87	RM	....	....	....	....	....	LT 1.000
02/11/87	RM	....	....	....	....	....	LT 1.000
02/18/87	RM	....	....	....	....	....	LT 1.000
02/25/87	RM	....	....	....	....	....	LT 1.000
03/04/87	RM	....	....	....	....	LT 1.000	LT 1.000
03/11/87	RM	....	....	....	....	LT 1.000	LT 1.000
03/18/87	RM	....	....	....	....	LT 1.000	LT 1.000
03/25/87	RM	....	....	....	....	LT 1.000	LT 1.000
04/01/87	RM	....	....	....	....	LT 1.000	LT 1.000
04/08/87	RM	....	....	....	....	LT 1.000	LT 1.000
04/14/87	RM	....	....	....	....	LT 1.000	LT 1.000
04/22/87	RM	....	....	....	....	LT 1.000	LT 1.000
04/29/87	RM	....	....	....	....	LT 1.000	LT 1.000
05/06/87	RM	....	....	....	....	LT 1.000	LT 1.000
05/13/87	RM	....	....	....	....	LT 1.000	LT 1.000
05/27/87	RM	....	....	....	....	LT 1.000	LT 1.000
06/03/87	RM	....	....	....	....	LT 1.000	LT 1.000
06/10/87	RM	....	....	....	....	LT 1.000	LT 1.000
06/17/87	RM	....	....	....	....	LT 1.000	LT 1.000
07/01/87	RM	....	....	....	....	LT 1.000	LT 1.000
07/08/87	RM	....	....	....	....	LT 1.000	LT 1.000
07/15/87	RM	....	....	....	....	LT 1.000	LT 1.000
07/22/87	RM	....	....	....	....	30.000	LT 1.000
07/29/87	RM	....	....	....	....	LT 1.000	LT 1.000
08/05/87	ES	LT 0.046	LT 0.059	338.000	LT 1.800	LT 2.800	LT 1.300
08/12/87	ES	....	....	....	....	....	....
08/19/87	ES	LT 0.046	LT 0.059	358.000	....	....	....
08/26/87	ES	LT 0.046	LT 0.059	340.000	....	....	....
09/02/87	ES	LT 0.046	LT 0.059	351.000	LT 1.800	LT 2.800	LT 1.300
09/09/87	ES	LT 0.046	LT 0.059	357.000
09/23/87	ES	354.000
09/30/87	ES	LT 0.046	LT 0.059	287.000	LT 1.800	LT 2.800	LT 1.300

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NORTH BOUNDARY TREATMENT PLANT - EFFLUENT FOR FY87

SAMPLE DATE	ORG.	111TCE ug/l	112TCE ug/l	110CE ug/l	110CLE ug/l	12DCE ug/l	12DCLE ug/l	ALDRN ug/l	AS ug/l	BTA ug/l
10/01/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
10/08/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
10/15/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
10/22/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
10/29/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
11/05/86	RM	....	....	....	....	....	10.000	LT 0.200	....	....
11/12/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
11/19/86	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
11/26/86	RM	....	....	....	....	....	5.000	LT 0.200	....	....
12/03/86	RM	....	....	....	....	....	....	LT 0.200	....	....
12/10/86	RM	....	....	....	....	....	....	LT 0.200	....	....
12/17/86	RM	....	....	....	....	....	....	LT 0.200	....	....
12/31/86	RM	....	....	....	....	....	....	LT 0.200	....	....
01/07/87	RM	....	....	....	....	....	....	LT 0.200	....	....
01/14/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
01/21/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
01/28/87	RM	....	....	....	....	....	10.000	LT 0.200	....	....
02/04/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
02/11/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
02/18/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
02/25/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
03/04/87	RM	....	....	....	....	....	LT 1.000	LT 0.200	....	....
03/11/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
03/18/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
3/25/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/01/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/08/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/14/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/22/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
04/29/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
05/06/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
05/13/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
05/27/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
06/03/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
06/10/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
06/17/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/01/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/08/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/15/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/22/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
07/29/87	RM	....	....	....	....	LT 1.000	LT 1.000	LT 0.200	....	....
08/05/87	ES	LT 1.090	LT 1.630	LT 1.850	LT 1.930	....	LT 2.070	LT 0.083	LT 2.500	LT 1.100
08/12/87	ES	....	....	....	....	....	....	....	....	....
08/19/87	ES	....	....	....	....	....	....	LT 0.083	....	....
08/26/87	ES	....	....	....	....	....	....	LT 0.083	....	....
09/02/87	ES	LT 1.090	LT 1.630	LT 1.850	LT 1.930	....	LT 2.070	LT 0.083	8.710	LT 1.100
09/09/87	ES	....	....	....	....	....	....	LT 0.083	....	....
09/23/87	ES
09/30/87	ES	LT 1.090	LT 1.630	LT 1.850	LT 1.930	LT 2.070	LT 0.083	LT 2.500	LT 1.100

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mg/l = MILLIGRAM PER LITER

NORTH BOUNDARY TREATMENT PLANT - EFFLUENT FOR FY87

SAMPLE DATE	ORG.	C6H6 ug/l	CCL4 ug/l	CH2CL2 ug/l	CHCL3 ug/l	CHLORIDE mg/l	CLC6H5 ug/l	CLDAN ug/l	CPMS ug/l	CPMS ug/l
10/01/86	RM	....	LT 1.000	....	50.000	194.000	....	....	LT 20.000	LT 20.000
10/08/86	RM	....	LT 1.000	....	LT 1.000	202.000	....	....	LT 20.000	LT 20.000
10/15/86	RM	....	LT 1.000	....	60.000	183.000	....	....	LT 20.000	LT 20.000
10/22/86	RM	....	LT 1.000	....	LT 1.000	208.000	....	....	LT 20.000	LT 20.000
10/29/86	RM	....	LT 1.000	....	40.000	211.000	....	....	LT 20.000	LT 20.000
11/05/86	RM	....	LT 1.000	....	20.000	215.000	....	....	LT 20.000	LT 20.000
11/12/86	RM	....	LT 1.000	....	30.000	205.000	....	....	LT 20.000	LT 20.000
11/19/86	RM	....	LT 1.000	....	LT 1.000	204.000	....	....	LT 20.000	LT 20.000
11/26/86	RM	....	LT 1.000	....	LT 1.000	228.000	....	....	LT 20.000	LT 20.000
12/03/86	RM	....	....	....	....	202.000	....	....	LT 20.000	LT 20.000
12/10/86	RM	....	....	....	....	195.000	....	....	LT 20.000	LT 20.000
12/17/86	RM	....	....	....	....	182.000	....	....	LT 20.000	LT 20.000
12/31/86	RM	....	....	....	....	187.000	....	....	LT 20.000	LT 20.000
01/07/87	RM	....	....	....	....	219.000	....	....	LT 20.000	LT 20.000
01/14/87	RM	....	LT 1.000	....	LT 1.000	240.000	....	....	LT 20.000	LT 20.000
01/21/87	RM	....	LT 1.000	....	LT 1.000	185.000	....	....	LT 20.000	LT 20.000
01/28/87	RM	....	LT 1.000	....	LT 1.000	181.000	....	....	LT 20.000	LT 20.000
02/04/87	RM	....	LT 1.000	....	LT 1.000	171.000	....	....	LT 20.000	LT 20.000
02/11/87	RM	....	LT 1.000	....	LT 1.000	100.000	....	....	LT 20.000	LT 20.000
02/18/87	RM	....	LT 1.000	....	LT 1.000	195.000	....	....	LT 20.000	LT 20.000
02/25/87	RM	....	LT 1.000	....	LT 1.000	189.000	....	....	LT 20.000	LT 20.000
03/04/87	RM	....	LT 1.000	....	LT 1.000	203.000	....	....	LT 20.000	LT 20.000
03/11/87	RM	....	LT 1.000	....	LT 1.000	131.000	....	....	LT 20.000	LT 20.000
03/18/87	RM	....	LT 1.000	....	LT 1.000	231.000	....	....	LT 20.000	LT 20.000
03/25/87	RM	....	LT 1.000	....	LT 1.000	295.000	....	....	LT 20.000	LT 20.000
04/01/87		....	LT 1.000	....	LT 1.000	207.000	....	....	LT 20.000	LT 20.000
04/08/87		....	LT 1.000	....	LT 1.000	521.000	....	....	LT 20.000	LT 20.000
04/14/87	M	....	LT 1.000	....	LT 1.000	221.000	....	....	LT 20.000	LT 20.000
04/22/87	RM	....	LT 1.000	....	LT 1.000	225.000	....	....	LT 20.000	LT 20.000
04/29/87	RM	....	LT 1.000	....	LT 1.000	202.000	....	....	LT 20.000	LT 20.000
05/06/87	RM	....	LT 1.000	....	LT 1.000	217.000	....	....	LT 20.000	LT 20.000
05/13/87	RM	....	LT 1.000	....	LT 1.000	203.000	....	....	LT 20.000	LT 20.000
05/27/87	RM	....	LT 1.000	....	60.000	300.000	....	....	LT 20.000	LT 20.000
06/03/87	RM	....	LT 1.000	....	LT 1.000	100.000	....	....	LT 20.000	LT 20.000
06/10/87	RM	....	LT 1.000	....	LT 1.000	100.000	....	....	LT 20.000	LT 20.000
06/17/87	RM	....	LT 1.000	....	LT 1.000	100.000	....	....	LT 20.000	LT 20.000
07/01/87	RM	....	LT 1.000	....	LT 1.000	210.000	....	....	LT 20.000	LT 20.000
07/08/87	RM	....	LT 1.000	....	LT 1.000	200.000	....	....	LT 20.000	LT 20.000
07/15/87	RM	....	LT 1.000	....	LT 1.000	219.000	....	....	LT 20.000	LT 20.000
07/22/87	RM	....	LT 1.000	....	LT 1.000	100.000	....	....	LT 20.000	LT 20.000
07/29/87	RM	....	LT 1.000	....	LT 1.000	229.000	....	....	LT 20.000	LT 20.000
08/05/87	ES	LT 1.920	LT 1.690	LT 2.480	LT 1.880	369.000	LT 1.360	LT 0.152	LT 1.080	LT 1.980
08/12/87	ES	....	....	....	....	....	....	....	....	....
08/19/87	ES	....	....	....	....	110.000	....	LT 0.152	....	....
08/26/87	ES	....	....	....	....	296.000	....	LT 0.152	....	....
09/02/87	ES	LT 1.920	LT 1.690	LT 2.480	LT 1.880	291.000	LT 1.360	LT 0.152	LT 1.080	LT 1.980
09/09/87	ES	....	....	....	....	297.000	....	LT 0.152	....	....
09/23/87	ES	....	....	....	....	267.000	....	....	....	....
09/30/87	ES	LT 1.920	LT 1.690	LT 2.480	LT 1.880	195.000	LT 1.360	LT 0.152	LT 1.080	LT 1.980

LT = LESS THAN The Following Concentration

.... INDICATES THAT ANALYSIS WAS NOT PERFORMED

ug/l = MICROGRAM PER LITER

mg/l = MILLIGRAM PER LITER

NORTH BOUNDARY TREATMENT PLANT - EFFLUENT FOR FY87

SAMPLE DATE	ORG.	CPHSO2 ug/l	DBCP ug/l	DCPD ug/l	DIMP ug/l	DITH ug/l	DLDRN ug/l	DMOS ug/l	DMMP ug/l	ENDRN ug/l
10/01/86	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
10/08/86	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
10/15/86	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
10/22/86	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
10/29/86	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
11/05/86	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
11/12/86	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
11/19/86	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
11/26/86	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
12/03/86	RM	LT 20.000	LT 0.200	....	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
12/10/86	RM	LT 20.000	LT 0.200	....	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
12/17/86	RM	LT 20.000	LT 0.200	....	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
12/31/86	RM	LT 20.000	LT 0.200	....	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
01/07/87	RM	LT 20.000	LT 0.200	....	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
01/14/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
01/21/87	RM	LT 20.000	LT 0.200	4.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
01/28/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
02/04/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
02/11/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
02/18/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
02/25/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
03/04/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
03/11/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
03/18/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
3/25/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
04/01/87	RM	LT 20.000	LT 0.200	1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
04/08/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
04/14/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
04/22/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
04/29/87	RM	LT 20.000	LT 0.200	3.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
05/06/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
05/13/87	RM	LT 20.000	LT 0.200	4.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
05/27/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
06/03/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
06/10/87	RM	LT 20.000	LT 0.200	1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
06/17/87	RM	LT 20.000	LT 0.200	2.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
07/01/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
07/08/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
07/15/87	RM	LT 20.000	LT 0.200	2.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
07/22/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
07/29/87	RM	LT 20.000	LT 0.200	LT 1.000	LT 10.000	LT 20.000	LT 0.200	....	....	LT 0.200
08/05/87	ES	LT 2.240	LT 0.130	LT 9.310	11.600	LT 3.340	LT 0.054	LT 1.160	LT 16.300	LT 0.060
08/12/87	ES	....	....	....	....	....	....	....	LT 16.300	....
08/19/87	ES	....	LT 0.130	LT 9.310	LT 10.100	....	LT 0.054	....	....	LT 0.060
08/26/87	ES	....	LT 0.130	LT 9.310	LT 10.100	....	LT 0.054	....	LT 16.300	LT 0.060
09/02/87	ES	LT 2.240	LT 0.130	LT 9.310	LT 10.100	LT 3.340	LT 0.054	LT 1.160	LT 16.300	LT 0.060
09/09/87	ES	....	LT 0.130	LT 9.310	LT 10.100	....	LT 0.054	....	LT 16.300	LT 0.060
09/23/87	ES	....	LT 0.130	LT 9.310	LT 10.100	....	....	....	LT 16.300	....
09/30/87	ES	LT 2.240	LT 0.130	LT 9.310	LT 10.100	LT 3.340	LT 0.054	LT 1.160	LT 16.300	LT 0.060

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mg/l = MILLIGRAM PER LITER

NORTH BOUNDARY TREATMENT PLANT - EFFLUENT FOR FY87

SAMPLE DATE	ORG.	ETC6H5 ug/l	FLUORIDE mg/l	HCCPD ug/l	ISODR ug/l	MEC6H5 ug/l	MIBK ug/l	M-XYLENE ug/l	OXAT ug/l	O,P-XY. ug/l
10/01/86	RM	....	2.770	....	LT 0.200	....	....	....	LT 20.000	....
10/08/86	RM	....	2.920	....	LT 0.200	....	....	....	LT 20.000	....
10/15/86	RM	....	2.400	....	LT 0.200	....	....	....	LT 20.000	....
10/22/86	RM	....	2.340	....	LT 0.200	....	....	....	LT 20.000	....
10/29/86	RM	....	2.610	....	LT 0.200	....	....	....	LT 20.000	....
11/05/86	RM	....	2.310	....	LT 0.200	....	....	....	LT 20.000	....
11/12/86	RM	....	2.360	....	LT 0.200	....	....	....	LT 20.000	....
11/19/86	RM	....	2.600	....	LT 0.200	....	....	....	LT 20.000	....
11/26/86	RM	....	2.440	....	LT 0.200	....	....	....	LT 20.000	....
12/03/86	RM	....	2.450	....	LT 0.200	....	....	....	LT 20.000	....
12/10/86	RM	....	2.580	....	LT 0.200	....	....	....	LT 20.000	....
12/17/86	RM	....	2.640	....	LT 0.200	....	....	....	LT 20.000	....
12/31/86	RM	....	2.000	....	LT 0.200	....	....	....	LT 20.000	....
01/07/87	RM	....	2.200	....	LT 0.200	....	....	....	LT 20.000	....
01/14/87	RM	....	2.490	....	LT 0.200	....	....	....	LT 20.000	....
01/21/87	RM	....	2.250	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
01/28/87	RM	....	2.090	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
02/04/87	RM	....	1.750	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
02/11/87	RM	....	2.470	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
02/18/87	RM	....	1.950	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
02/25/87	RM	....	2.220	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
03/04/87	RM	....	2.330	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
03/11/87	RM	....	1.650	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
03/18/87	RM	....	1.710	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
03/25/87	RM	....	2.460	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
04/01/87	RM	....	2.200	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
04/08/87	RM	....	2.160	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
04/14/87	RM	....	1.560	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
04/22/87	RM	....	1.440	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
04/29/87	RM	....	2.400	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
05/06/87	RM	....	2.040	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
05/13/87	RM	....	....	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
05/27/87	RM	....	2.340	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
06/03/87	RM	....	2.290	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
06/10/87	RM	....	2.460	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
06/17/87	RM	....	2.240	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
07/01/87	RM	....	2.500	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
07/08/87	RM	....	2.220	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
07/15/87	RM	....	1.950	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
07/22/87	RM	....	2.200	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
07/29/87	RM	....	2.000	....	LT 0.200	LT 1.000	....	....	LT 20.000	....
08/05/87	ES	LT 0.620	2.080	LT 0.083	LT 0.056	LT 2.100	LT 12.900	LT 1.040	LT 1.350	LT 1.340
08/12/87	ES	....	....	....	....	....	....	....	....	....
08/19/87	ES	....	2.360	LT 0.083	LT 0.056	....	LT 12.900	....	....	....
08/26/87	ES	....	2.230	LT 0.083	LT 0.056	....	LT 12.900	....	....	....
09/02/87	ES	LT 0.620	2.300	LT 0.083	LT 0.056	LT 2.100	LT 12.900	LT 1.040	LT 1.350	LT 1.340
09/09/87	ES	....	2.380	LT 0.083	LT 0.056	....	LT 12.900	....	....	....
09/23/87	ES	....	2.510	....	....	....	LT 12.900	....	....	....
09/30/87	ES	LT 0.620	2.090	LT 0.083	LT 0.056	LT 2.100	LT 12.900	LT 1.040	LT 1.350	LT 1.340

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NORTH BOUNDARY TREATMENT PLANT - EFFLUENT FOR FY87

SAMPLE DATE	ORG.	PPODE ug/l	PPOOT ug/l	SO4 mg/l	T12DCE ug/l	TCLEE ug/l	TRCLE ug/l
10/01/86	RM	....	....	....	....	....	LT 1.000
10/08/86	RM	....	....	....	....	....	LT 1.000
10/15/86	RM	....	....	....	....	....	LT 1.000
10/22/86	RM	....	....	....	....	....	LT 1.000
10/29/86	RM	....	....	....	....	....	LT 1.000
11/05/86	RM	....	....	....	....	....	LT 1.000
11/12/86	RM	....	....	....	....	....	LT 1.000
11/19/86	RM	....	....	....	....	....	LT 1.000
11/26/86	RM	....	....	....	....	....	LT 1.000
12/03/86	RM	....	....	....	....	....	....
12/10/86	RM	....	....	....	....	....	....
12/17/86	RM	....	....	....	....	....	....
12/31/86	RM	....	....	....	....	....	....
01/07/87	RM	....	....	....	....	....	....
01/14/87	RM	....	....	....	....	....	LT 1.000
01/21/87	RM	....	....	....	....	....	LT 1.000
01/28/87	RM	....	....	....	....	....	LT 1.000
02/04/87	RM	....	....	....	....	....	LT 1.000
02/11/87	RM	....	....	....	....	....	LT 1.000
02/18/87	RM	....	....	....	....	....	LT 1.000
02/25/87	RM	....	....	....	....	....	LT 1.000
03/04/87	RM	....	....	....	....	LT 1.000	LT 1.000
03/11/87	RM	....	....	....	....	LT 1.000	LT 1.000
03/18/87	RM	....	....	....	....	LT 1.000	LT 1.000
3/25/87	RM	....	....	....	....	LT 1.000	LT 1.000
04/01/87	RM	....	....	....	....	LT 1.000	LT 1.000
04/08/87	RM	....	....	....	....	LT 1.000	LT 1.000
04/14/87	RM	....	....	....	....	LT 1.000	LT 1.000
04/22/87	RM	....	....	....	....	LT 1.000	LT 1.000
04/29/87	RM	....	....	....	....	LT 1.000	LT 1.000
05/06/87	RM	....	....	....	....	LT 1.000	LT 1.000
05/13/87	RM	....	....	....	....	LT 1.000	LT 1.000
05/27/87	RM	....	....	....	....	LT 1.000	LT 1.000
06/03/87	RM	....	....	....	....	LT 1.000	LT 1.000
06/10/87	RM	....	....	....	....	LT 1.000	LT 1.000
06/17/87	RM	....	....	....	....	LT 1.000	LT 1.000
07/01/87	RM	....	....	....	....	LT 1.000	LT 1.000
07/08/87	RM	....	....	....	....	LT 1.000	LT 1.000
07/15/87	RM	....	....	....	....	LT 1.000	LT 1.000
07/22/87	RM	....	....	....	....	LT 1.000	LT 1.000
07/29/87	RM	....	....	....	....	LT 1.000	LT 1.000
08/05/87	ES	LT 0.046	LT 0.059	210.000	LT 1.800	LT 2.800	LT 1.300
08/12/87	ES	....	....	....	....	....	....
08/19/87	ES	LT 0.046	LT 0.059	407.000	....	....	....
08/26/87	ES	LT 0.046	LT 0.059	360.000	....	....	....
09/02/87	ES	LT 0.046	LT 0.059	384.000	LT 1.800	LT 2.800	LT 1.300
09/09/87	ES	LT 0.046	LT 0.059	391.000
09/23/87	ES	383.000
09/30/87	ES	LT 0.046	LT 0.059	318.000	LT 1.800	LT 2.800	LT 1.300

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APPENDIX D
DEWATERING WELL DATA

R.I.C.

FY 86 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLS

ANALYTE: ALDRN
DETECTION LIMIT: 0.2 UGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
30	3	0	0%	LT DL	LT DL	LT DL
31	3	0	0%	LT DL	LT DL	LT DL
32	3	0	0%	LT DL	LT DL	LT DL
33	2	1	50%	*	LT DL	0.27
34	3	1	33%	*	LT DL	0.29
35	3	0	0%	LT DL	LT DL	LT DL
1	3	0	0%	LT DL	LT DL	LT DL
2	3	0	0%	LT DL	LT DL	LT DL
3	3	1	33%	*	LT DL	0.31
4	3	1	33%	*	LT DL	0.37
5	3	0	0%	LT DL	LT DL	LT DL
6	3	1	33%	*	LT DL	0.35
7	3	1	33%	*	LT DL	0.40
8	3	1	33%	*	LT DL	0.30
9	3	1	33%	*	LT DL	0.30
10	3	1	33%	*	LT DL	0.20
11	3	0	0%	LT DL	LT DL	LT DL
12	1	0	0%	LT DL	LT DL	LT DL
13	3	0	0%	LT DL	LT DL	LT DL
14	3	0	0%	LT DL	LT DL	LT DL
15	3	0	0%	LT DL	LT DL	LT DL
16	2	0	0%	LT DL	LT DL	LT DL
17	3	0	0%	LT DL	LT DL	LT DL
18	4	0	0%	LT DL	LT DL	LT DL
19	3	0	0%	LT DL	LT DL	LT DL
20	3	0	0%	LT DL	LT DL	LT DL
21	3	0	0%	LT DL	LT DL	LT DL
22	3	0	0%	LT DL	LT DL	LT DL
23	2	0	0%	LT DL	LT DL	LT DL
24	3	0	0%	LT DL	LT DL	LT DL
25	3	0	0%	LT DL	LT DL	LT DL
26	1	0	0%	LT DL	LT DL	LT DL
27	3	0	0%	LT DL	LT DL	LT DL
28	2	0	0%	LT DL	LT DL	LT DL
29	3	0	0%	LT DL	LT DL	LT DL

R.I.C.

FY 87 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLS

ANALYTE: ALDRN
DETECTION LIMIT: 0.2 UGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
30	4	0	0%	LT DL	LT DL	LT DL
31	4	0	0%	LT DL	LT DL	LT DL
32	4	0	0%	LT DL	LT DL	LT DL
33	4	0	0%	LT DL	LT DL	LT DL
34	4	0	0%	LT DL	LT DL	LT DL
35	4	0	0%	LT DL	LT DL	LT DL
1	4	0	0%	LT DL	LT DL	LT DL
2	4	0	0%	LT DL	LT DL	LT DL
3	4	0	0%	LT DL	LT DL	LT DL
4	3	0	0%	LT DL	LT DL	LT DL
5	4	0	0%	LT DL	LT DL	LT DL
6	4	0	0%	LT DL	LT DL	LT DL
7	4	0	0%	LT DL	LT DL	LT DL
8	4	0	0%	LT DL	LT DL	LT DL
9	4	0	0%	LT DL	LT DL	LT DL
10	4	0	0%	LT DL	LT DL	LT DL
11	4	0	0%	LT DL	LT DL	LT DL
12	4	0	0%	LT DL	LT DL	LT DL
13	4	0	0%	LT DL	LT DL	LT DL
14	4	0	0%	LT DL	LT DL	LT DL
15	4	0	0%	LT DL	LT DL	LT DL
16	4	0	0%	LT DL	LT DL	LT DL
17	4	0	0%	LT DL	LT DL	LT DL
18	4	0	0%	LT DL	LT DL	LT DL
19	4	0	0%	LT DL	LT DL	LT DL
20	3	0	0%	LT DL	LT DL	LT DL
21	3	0	0%	LT DL	LT DL	LT DL
22	3	0	0%	LT DL	LT DL	LT DL
23	3	0	0%	LT DL	LT DL	LT DL
24	3	0	0%	LT DL	LT DL	LT DL
25	3	0	0%	LT DL	LT DL	LT DL
26	3	0	0%	LT DL	LT DL	LT DL
27	3	0	0%	LT DL	LT DL	LT DL
28	3	0	0%	LT DL	LT DL	LT DL
29	3	0	0%	LT DL	LT DL	LT DL

R.I.C.

FY 86 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLSANALYTE: CHLORIDE
DETECTION LIMIT: 20 MGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
30	3	3	100%	326.67	315.00	338.00
31	3	3	100%	291.00	285.00	296.00
32	3	3	100%	356.67	295.00	439.00
33	2	2	100%	607.00	558.00	656.00
34	3	3	100%	266.00	227.00	331.00
35	3	3	100%	220.00	209.00	235.00
1	3	3	100%	339.50	239.00	545.00
2	3	3	100%	440.67	422.00	454.00
3	3	3	100%	684.33	452.00	1030.00
4	3	3	100%	901.00	700.00	1030.00
5	3	3	100%	588.33	278.00	787.00
6	3	3	100%	240.67	146.00	335.00
7	3	3	100%	228.33	188.00	305.00
8	3	3	100%	160.33	130.00	202.00
9	3	3	100%	262.00	115.00	538.00
10	3	3	100%	130.67	120.00	138.00
11	3	3	100%	107.67	106.00	110.00
12	1	1	100%	103.00	103.00	103.00
13	3	3	100%	101.40	98.20	103.00
14	3	3	100%	90.40	80.10	103.00
15	3	3	100%	81.10	78.10	84.10
16	2	2	100%	76.20	67.60	84.80
17	3	3	100%	71.23	67.60	75.80
18	4	4	100%	80.17	67.60	94.30
19	3	3	100%	112.93	94.80	127.00
20	3	3	100%	105.13	97.40	116.00
21	3	3	100%	103.67	102.00	107.00
22	3	3	100%	104.33	103.00	106.00
23	2	2	100%	113.50	109.00	118.00
24	3	3	100%	122.00	116.00	126.00
25	3	3	100%	138.33	130.00	150.00
26	1	1	100%	149.00	149.00	149.00
27	3	3	100%	124.00	118.00	133.00
28	2	2	100%	201.00	161.00	241.00
29	3	3	100%	300.67	294.00	315.00

R.I.C.

FY 87 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLSANALYTE: CHLORIDE
DETECTION LIMIT: 20 MGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
30	4	4	100%	311.25	300.00	327.00
31	4	4	100%	233.78	24.10	309.00
32	4	4	100%	471.75	454.00	500.00
33	4	4	100%	876.75	785.00	1000.00
34	4	4	100%	571.25	474.00	700.00
35	4	4	100%	220.75	200.00	242.00
1	4	4	100%	393.25	243.00	700.00
2	4	4	100%	419.50	415.00	424.00
3	4	4	100%	706.25	612.00	911.00
4	3	3	100%	883.33	300.00	1200.00
5	4	4	100%	758.25	242.00	1100.00
6	4	4	100%	507.50	259.00	702.00
7	4	4	100%	362.00	195.00	558.00
8	4	4	100%	190.25	138.00	268.00
9	4	4	100%	141.50	123.00	163.00
10	4	4	100%	145.75	125.00	175.00
11	4	4	100%	127.25	121.00	134.00
12	4	4	100%	115.75	101.00	125.00
13	4	4	100%	113.33	97.30	134.00
14	4	4	100%	103.35	92.10	118.00
15	4	4	100%	97.88	88.50	110.00
16	4	4	100%	97.85	91.30	108.00
17	4	4	100%	88.72	79.90	99.00
18	4	4	100%	89.68	80.60	96.50
19	4	4	100%	95.05	85.60	104.00
20	3	3	100%	116.00	102.00	132.00
21	3	3	100%	105.67	103.00	109.00
22	3	3	100%	102.47	97.60	112.00
23	3	3	100%	110.00	104.00	119.00
24	3	3	100%	111.33	104.00	123.00
25	3	3	100%	120.33	108.00	132.00
26	3	3	100%	109.43	97.30	119.00
27	3	3	100%	102.00	81.00	124.00
28	3	3	100%	161.00	109.00	233.00
29	3	3	100%	342.00	311.00	342.00

R.I.C.

FY 86 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLS

ANALYTE: COMB. ORGANO-SULFUR
DETECTION LIMIT: 60 UGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
30	3	0	0%	LT DL	LT DL	LT DL
31	3	0	0%	LT DL	LT DL	LT DL
32	3	0	0%	LT DL	LT DL	LT DL
33	2	0	0%	LT DL	LT DL	LT DL
34	3	0	0%	LT DL	LT DL	LT DL
35	3	0	0%	LT DL	LT DL	LT DL
1	3	0	0%	LT DL	LT DL	LT DL
2	3	0	0%	LT DL	LT DL	LT DL
3	3	0	0%	LT DL	LT DL	LT DL
4	3	3	100%	80.23	79.40	80.70
5	3	3	100%	109.27	104.60	115.50
6	3	3	100%	102.03	90.50	121.70
7	3	3	100%	96.87	87.00	103.10
8	3	3	100%	92.67	91.80	93.20
9	3	2	67%	*	LT DL	71.80
10	3	0	0%	LT DL	LT DL	LT DL
11	3	0	0%	LT DL	LT DL	LT DL
12	1	0	0%	LT DL	LT DL	LT DL
13	3	0	0%	LT DL	LT DL	LT DL
14	3	0	0%	LT DL	LT DL	LT DL
15	3	0	0%	LT DL	LT DL	LT DL
16	2	0	0%	LT DL	LT DL	LT DL
17	3	0	0%	LT DL	LT DL	LT DL
18	3	0	0%	LT DL	LT DL	LT DL
19	3	0	0%	LT DL	LT DL	LT DL
20	3	0	0%	LT DL	LT DL	LT DL
21	3	0	0%	LT DL	LT DL	LT DL
22	3	0	0%	LT DL	LT DL	LT DL
23	2	0	0%	LT DL	LT DL	LT DL
24	3	0	0%	LT DL	LT DL	LT DL
25	3	0	0%	LT DL	LT DL	LT DL
26	1	0	0%	LT DL	LT DL	LT DL
27	3	0	0%	LT DL	LT DL	LT DL
28	3	0	0%	LT DL	LT DL	LT DL
29	3	0	0%	LT DL	LT DL	LT DL

R.I.C.

FY 87 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLS

ANALYTE: COMB. ORGANO-SULFUR
DETECTION LIMIT: 60 UCL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
30	4	0	0%	LT DL	LT DL	LT DL
31	4	0	0%	LT DL	LT DL	LT DL
32	4	0	0%	LT DL	LT DL	LT DL
33	4	2	50%	*	LT DL	64.40
34	4	0	0%	LT DL	LT DL	LT DL
35	4	0	0%	LT DL	LT DL	LT DL
1	4	1	25%	*	LT DL	105.00
2	4	0	0%	LT DL	LT DL	LT DL
3	4	0	0%	LT DL	LT DL	LT DL
4	3	3	100%	88.67	81.00	94.40
5	4	3	75%	74.40	LT DL	121.50
6	4	4	100%	119.68	88.60	150.50
7	4	4	100%	103.92	90.00	120.80
8	4	4	100%	85.48	73.80	98.30
9	4	3	75%	64.25	LT DL	73.40
10	4	3	75%	53.88	LT DL	73.20
11	4	0	0%	LT DL	LT DL	LT DL
12	4	0	0%	LT DL	LT DL	LT DL
	4	0	0%	LT DL	LT DL	LT DL
	4	0	0%	LT DL	LT DL	LT DL
15	4	0	0%	LT DL	LT DL	LT DL
16	4	0	0%	LT DL	LT DL	LT DL
17	4	0	0%	LT DL	LT DL	LT DL
18	4	0	0%	LT DL	LT DL	LT DL
19	4	0	0%	LT DL	LT DL	LT DL
20	3	0	0%	LT DL	LT DL	LT DL
21	3	0	0%	LT DL	LT DL	LT DL
22	3	0	0%	LT DL	LT DL	LT DL
23	3	0	0%	LT DL	LT DL	LT DL
24	3	0	0%	LT DL	LT DL	LT DL
25	3	0	0%	LT DL	LT DL	LT DL
26	3	0	0%	LT DL	LT DL	LT DL
27	3	0	0%	LT DL	LT DL	LT DL
28	3	0	0%	LT DL	LT DL	LT DL
29	3	0	0%	LT DL	LT DL	LT DL

R.I.C.

FY 86 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLS

ANALYTE: DBCP
DETECTION LIMIT: 0.2 UGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
-----	-----	-----	-----	-----	-----	-----
30	3	0	0%	LT DL	LT DL	LT DL
31	3	0	0%	LT DL	LT DL	LT DL
32	3	0	0%	LT DL	LT DL	LT DL
33	2	0	0%	LT DL	LT DL	LT DL
34	3	0	0%	LT DL	LT DL	LT DL
35	3	0	0%	LT DL	LT DL	LT DL
1	3	0	0%	LT DL	LT DL	LT DL
2	3	0	0%	LT DL	LT DL	LT DL
3	3	0	0%	LT DL	LT DL	LT DL
4	3	1	33%	*	LT DL	0.21
5	2	2	100%	1.79	1.58	2.00
6	2	2	100%	2.29	2.00	2.58
7	2	2	100%	4.96	2.20	7.71
8	2	2	100%	4.92	2.87	6.97
9	2	2	100%	1.48	1.00	1.96
10	2	2	100%	1.17	1.07	1.27
11	2	2	100%	0.49	0.35	0.63
12	1	1	100%	0.33	0.33	0.33
13	3	2	67%	*	LT DL	0.96
14	2	1	50%	*	LT DL	0.84
15	3	0	0%	LT DL	LT DL	LT DL
16	2	0	0%	LT DL	LT DL	LT DL
17	2	0	0%	LT DL	LT DL	LT DL
18	3	2	67%	*	LT DL	0.65
19	3	2	67%	*	LT DL	2.01
20	3	2	67%	*	LT DL	1.91
21	3	0	0%	LT DL	LT DL	LT DL
22	3	0	0%	LT DL	LT DL	LT DL
23	2	0	0%	LT DL	LT DL	LT DL
24	3	0	0%	LT DL	LT DL	LT DL
25	3	0	0%	LT DL	LT DL	LT DL
26	1	0	0%	LT DL	LT DL	LT DL
27	3	0	0%	LT DL	LT DL	LT DL
28	2	0	0%	LT DL	LT DL	LT DL
29	3	0	0%	LT DL	LT DL	LT DL

R.I.C.

FY 87 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLS

ANALYTE: DBCP
DETECTION LIMIT: 0.2 UGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
30	4	0	0%	LT DL	LT DL	LT DL
31	4	0	0%	LT DL	LT DL	LT DL
32	4	0	0%	LT DL	LT DL	LT DL
33	4	0	0%	LT DL	LT DL	LT DL
34	4	0	0%	LT DL	LT DL	LT DL
35	4	0	0%	LT DL	LT DL	LT DL
1	4	2	50%	*	LT DL	1.41
2	4	0	0%	LT DL	LT DL	LT DL
3	4	0	0%	LT DL	LT DL	LT DL
4	3	0	0%	LT DL	LT DL	LT DL
5	4	4	100%	3.51	0.31	11.50
6	4	4	100%	2.50	1.96	3.66
7	4	4	100%	2.17	1.71	2.81
8	4	4	100%	3.94	1.84	9.46
9	4	4	100%	1.32	0.79	1.70
10	4	4	100%	1.33	1.02	1.58
11	4	4	100%	0.70	0.56	0.98
12	4	2	50%	*	LT DL	0.32
13	4	4	100%	0.37	0.30	0.44
14	4	4	100%	0.48	0.43	0.60
15	4	4	100%	0.40	0.23	0.53
16	4	3	75%	0.33	LT DL	0.40
17	4	0	0%	LT DL	LT DL	LT DL
18	4	1	25%	*	LT DL	0.20
19	4	3	75%	0.42	LT DL	0.63
20	3	3	100%	1.14	0.85	1.54
21	3	0	0%	LT DL	LT DL	LT DL
22	3	0	0%	LT DL	LT DL	LT DL
23	3	0	0%	LT DL	LT DL	LT DL
24	3	0	0%	LT DL	LT DL	LT DL
25	3	0	0%	LT DL	LT DL	LT DL
26	3	0	0%	LT DL	LT DL	LT DL
27	3	0	0%	LT DL	LT DL	LT DL
28	3	0	0%	LT DL	LT DL	LT DL
29	3	0	0%	LT DL	LT DL	LT DL

R.I.C.

FY 86 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLS

ANALYTE: DCPD
DETECTION LIMIT: 1.0 UGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
30	1	0	0%	LT DL	LT DL	LT DL
31	1	0	0%	LT DL	LT DL	LT DL
32	1	0	0%	LT DL	LT DL	LT DL
33	0	0	0%	NA	NA	NA
34	1	0	0%	LT DL	LT DL	LT DL
35	1	0	0%	LT DL	LT DL	LT DL
1	2	0	0%	LT DL	LT DL	LT DL
2	3	2	67%	*	LT DL	6.00
3	3	3	100%	130.00	90.00	200.00
4	3	3	100%	600.00	400.00	900.00
5	3	3	100%	300.00	200.00	400.00
6	3	3	100%	400.00	100.00	900.00
7	2	2	100%	45.00	20.00	70.00
8	2	2	100%	16.00	2.00	30.00
9	2	0	0%	LT DL	LT DL	LT DL
10	1	1	100%	2.00	2.00	2.00
11	2	0	0%	LT DL	LT DL	LT DL
12	1	1	100%	1.00	1.00	1.00
13	2	0	0%	LT DL	LT DL	LT DL
14	2	1	50%	*	LT DL	1.00
15	2	0	0%	LT DL	LT DL	LT DL
16	0	0	0%	NA	NA	NA
17	1	0	0%	LT DL	LT DL	LT DL
18	1	0	0%	LT DL	LT DL	LT DL
19	1	0	0%	LT DL	LT DL	LT DL
20	1	0	0%	LT DL	LT DL	LT DL
21	0	0	0%	NA	NA	NA
22	0	0	0%	NA	NA	NA
23	0	0	0%	NA	NA	NA
24	1	0	0%	LT DL	LT DL	LT DL
25	0	0	0%	NA	NA	NA
26	1	0	0%	LT DL	LT DL	LT DL
27	1	0	0%	LT DL	LT DL	LT DL
28	1	0	0%	LT DL	LT DL	LT DL
29	1	0	0%	LT DL	LT DL	LT DL

R.I.C.

FY 87 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLS

ANALYTE: DCPD
DETECTION LIMIT: 1.0 UGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
---	---	---	---	---	---	---
30	4	0	0%	LT DL	LT DL	LT DL
31	4	1	25%	*	LT DL	2.00
32	4	1	25%	*	LT DL	2.00
33	4	2	50%	*	LT DL	3.00
34	3	1	33%	*	LT DL	2.00
35	3	1	33%	*	LT DL	1.00
1	4	3	75%	150.75	LT DL	400.00
2	4	4	100%	8.50	2.00	20.00
3	4	4	100%	175.00	100.00	300.00
4	3	3	100%	444.67	200.00	700.00
5	4	4	100%	191.75	4.00	363.00
6	4	4	100%	140.00	60.00	200.00
7	4	4	100%	75.00	20.00	100.00
8	4	2	50%	*	LT DL	80.00
9	4	2	50%	*	LT DL	10.00
10	4	2	50%	*	LT DL	20.00
11	4	1	25%	*	LT DL	2.00
12	4	1	25%	*	LT DL	2.00
13	4	0	0%	LT DL	LT DL	LT DL
14	4	0	0%	LT DL	LT DL	LT DL
15	4	1	25%	*	LT DL	3.00
16	4	2	50%	*	LT DL	2.00
17	4	2	50%	*	LT DL	3.00
18	4	3	75%	1.50	LT DL	2.00
19	4	2	50%	*	LT DL	2.00
20	3	1	33%	*	LT DL	
21	3	1	33%	*	LT DL	3.00
22	3	0	0%	LT DL	LT DL	LT DL
23	3	1	33%	*	LT DL	4.00
24	3	1	33%	*	LT DL	2.00
25	3	1	33%	*	LT DL	6.00
26	3	1	33%	*	LT DL	2.00
27	3	1	33%	*	LT DL	3.00
28	3	0	0%	LT DL	LT DL	LT DL
29	3	0	0%	LT DL	LT DL	LT DL

R.I.C.

FY 86 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLS

ANALYTE: DIMP
DETECTION LIMIT: 10 UGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
-----	-----	-----	-----	-----	-----	-----
30	3	0	0%	LT DL	LT DL	LT DL
31	3	0	0%	LT DL	LT DL	LT DL
32	3	3	100%	106.07	86.20	124.00
33	2	2	100%	332.50	290.00	375.00
34	3	3	100%	431.00	367.00	486.00
35	3	3	100%	557.00	478.00	602.00
1	3	3	100%	629.00	534.00	765.00
2	3	3	100%	1396.67	1080.00	1630.00
3	3	3	100%	961.00	850.00	1060.00
4	3	3	100%	903.33	822.00	957.00
5	3	3	100%	650.33	639.00	663.00
6	3	3	100%	288.00	238.00	337.00
7	3	3	100%	162.67	150.00	177.00
8	3	3	100%	151.67	142.00	161.00
9	3	3	100%	107.33	101.00	111.00
10	3	3	100%	169.33	159.00	180.00
11	3	3	100%	87.77	80.30	102.00
12	1	1	100%	69.30	69.30	69.30
13	3	3	100%	75.97	56.70	105.00
14	3	3	100%	52.60	46.40	60.70
15	3	3	100%	26.60	21.30	29.80
16	2	2	100%	24.95	24.00	25.90
17	3	3	100%	16.93	11.30	20.80
18	4	4	100%	18.13	13.50	26.30
19	3	0	0%	LT DL	LT DL	LT DL
20	3	0	0%	LT DL	LT DL	LT DL
21	3	0	0%	LT DL	LT DL	LT DL
22	3	0	0%	LT DL	LT DL	LT DL
23	2	0	0%	LT DL	LT DL	LT DL
24	3	0	0%	LT DL	LT DL	LT DL
25	3	0	0%	LT DL	LT DL	LT DL
26	1	0	0%	LT DL	LT DL	LT DL
27	3	0	0%	LT DL	LT DL	LT DL
28	2	0	0%	LT DL	LT DL	LT DL
29	3	0	0%	LT DL	LT DL	LT DL

R.I.C.

FY 87 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLS

ANALYTE: DIMP
DETECTION LIMIT: 10 UGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
30	4	0	0%	LT DL	LT DL	LT DL
31	4	0	0%	LT DL	LT DL	LT DL
32	4	4	100%	74.55	52.40	99.00
33	4	4	100%	399.00	373.00	422.00
34	4	4	100%	463.75	450.00	484.00
35	4	4	100%	504.50	400.00	583.00
1	4	4	100%	713.00	609.00	834.00
2	4	4	100%	1507.50	1400.00	1710.00
3	4	4	100%	1014.50	928.00	1110.00
4	3	3	100%	1027.33	912.00	1090.00
5	4	4	100%	783.75	565.00	988.00
6	4	4	100%	409.50	226.00	537.00
7	4	4	100%	286.00	148.00	427.00
8	4	4	100%	153.75	119.00	207.00
9	4	4	100%	96.63	88.80	112.00
10	4	4	100%	140.25	121.00	161.00
11	4	4	100%	95.83	88.20	103.00
12	4	4	100%	67.25	58.20	73.00
13	4	4	100%	65.23	62.20	71.90
14	4	4	100%	62.50	43.00	80.50
15	4	4	100%	51.15	31.90	66.20
16	4	4	100%	36.20	26.60	47.70
17	4	4	100%	17.40	13.70	21.20
18	4	3	75%	12.90	LT DL	16.90
19	4	0	0%	LT DL	LT DL	LT DL
20	3	0	0%	LT DL	LT DL	LT DL
21	3	0	0%	LT DL	LT DL	LT DL
22	3	0	0%	LT DL	LT DL	LT DL
23	3	0	0%	LT DL	LT DL	LT DL
24	3	0	0%	LT DL	LT DL	LT DL
25	3	0	0%	LT DL	LT DL	LT DL
26	3	0	0%	LT DL	LT DL	LT DL
27	3	0	0%	LT DL	LT DL	LT DL
28	3	0	0%	LT DL	LT DL	LT DL
29	3	0	0%	LT DL	LT DL	LT DL

R.I.C.

FY 86 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLS

ANALYTE: DLDRN
DETECTION LIMIT: 0.2 UGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
30	3	1	33%	*	LT DL	0.53
31	3	2	67%	*	LT DL	0.53
32	3	3	100%	0.77	0.32	1.03
33	2	2	100%	1.05	0.53	1.56
34	3	3	100%	1.31	0.47	2.50
35	3	3	100%	1.08	0.45	1.99
1	3	1	33%	*	LT DL	LT DL
2	3	1	33%	*	LT DL	0.40
3	3	3	100%	1.31	1.00	1.83
4	3	2	67%	*	LT DL	3.00
5	3	1	33%	*	LT DL	5.81
6	3	2	67%	*	LT DL	3.11
7	3	2	67%	*	LT DL	2.66
8	3	3	100%	3.08	1.99	4.99
9	3	3	100%	1.65	1.42	2.03
10	3	3	100%	1.46	1.04	1.95
11	3	3	100%	0.73	0.57	0.82
12	1	1	100%	0.40	0.40	0.40
13	3	3	100%	0.65	0.33	0.91
14	3	3	100%	0.55	0.32	0.92
15	3	3	100%	0.33	0.26	0.39
16	2	0	0%	LT DL	LT DL	LT DL
17	3	1	33%	*	LT DL	0.34
18	4	1	25%	*	LT DL	0.31
19	3	3	100%	0.38	0.21	0.60
20	3	3	100%	0.58	0.34	0.90
21	3	3	100%	0.32	0.25	0.44
22	3	1	33%	*	LT DL	0.31
23	2	0	0%	LT DL	LT DL	LT DL
24	3	0	0%	LT DL	LT DL	LT DL
25	3	0	0%	LT DL	LT DL	LT DL
26	1	0	0%	LT DL	LT DL	LT DL
27	3	1	33%	*	LT DL	0.20
28	2	0	0%	LT DL	LT DL	LT DL
29	3	0	0%	LT DL	LT DL	LT DL

R.I.C.

FY 87 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLS

ANALYTE: DLDRN
DETECTION LIMIT: 0.2 UGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
30	4	2	50%	*	LT DL	0.24
31	4	2	50%	*	LT DL	0.27
32	4	4	100%	0.60	0.49	0.73
33	4	4	100%	0.83	0.74	0.96
34	4	4	100%	0.84	0.64	1.05
35	4	4	100%	0.57	0.45	0.66
1	4	4	100%	1.94	0.44	5.41
2	4	3	75%	0.28	LT DL	0.35
3	4	3	75%	0.95	LT DL	1.37
4	3	3	100%	8.49	6.15	12.80
5	4	4	100%	4.03	0.31	8.05
6	4	4	100%	5.30	3.63	7.81
7	4	4	100%	2.80	1.79	3.65
8	4	4	100%	2.47	1.66	3.57
9	4	4	100%	1.57	1.29	1.94
10	4	4	100%	1.16	0.57	1.61
11	4	4	100%	0.68	0.55	0.78
12	4	4	100%	0.47	0.38	0.55
13	4	4	100%	0.58	0.42	0.71
14	4	4	100%	0.41	0.25	0.53
15	4	4	100%	0.29	0.24	0.38
16	4	0	0%	LT DL	LT DL	LT DL
17	4	0	0%	LT DL	LT DL	LT DL
18	4	0	0%	LT DL	LT DL	LT DL
19	4	0	0%	LT DL	LT DL	LT DL
20	3	3	100%	0.34	0.00	0.31
21	3	3	100%	0.34	0.00	0.25
22	3	1	33%	*	LT DL	0.23
23	3	0	0%	LT DL	LT DL	LT DL
24	3	0	0%	LT DL	LT DL	LT DL
25	3	0	0%	LT DL	LT DL	LT DL
26	3	0	0%	LT DL	LT DL	LT DL
27	3	0	0%	LT DL	LT DL	LT DL
28	3	0	0%	LT DL	LT DL	LT DL
29	3	0	0%	LT DL	LT DL	LT DL

R.I.C.

FY 86 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLS

ANALYTE: FLUORIDE
DETECTION LIMIT: 0.2 MGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
30	3	3	100%	6.30	5.00	8.60
31	3	3	100%	5.53	6.00	6.60
32	3	3	100%	5.20	4.00	6.90
33	2	2	100%	3.90	3.70	4.10
34	3	3	100%	4.87	3.70	6.10
35	3	3	100%	5.33	4.40	7.00
1	3	3	100%	5.20	3.30	6.20
2	3	3	100%	3.03	1.40	4.90
3	3	3	100%	3.80	2.30	4.80
4	3	3	100%	3.43	2.00	4.40
5	3	3	100%	3.57	1.80	4.80
6	3	3	100%	4.07	2.10	5.40
7	3	3	100%	4.70	3.90	5.20
8	3	3	100%	3.83	3.30	4.70
9	3	3	100%	3.57	3.00	4.50
10	3	3	100%	3.50	2.90	4.70
11	3	3	100%	3.30	3.00	3.70
12	1	1	100%	3.70	3.70	3.70
13	3	3	100%	3.50	3.20	3.70
14	3	3	100%	3.60	3.30	4.10
15	3	3	100%	3.63	3.40	4.10
16	2	2	100%	2.80	2.30	3.30
17	3	3	100%	2.75	2.25	3.00
18	4	4	100%	2.65	2.20	2.80
19	3	3	100%	2.15	1.80	2.50
20	3	3	100%	2.06	1.90	2.19
21	2	2	100%	1.65	1.50	1.80
22	2	2	100%	1.90	1.50	2.30
23	1	1	100%	2.00	2.00	2.00
24	2	2	100%	11.05	1.80	20.30
25	2	2	100%	8.65	1.80	15.50
26	1	1	100%	2.95	2.95	2.95
27	3	3	100%	8.30	2.10	20.00
28	2	2	100%	12.22	2.90	21.50
29	3	3	100%	5.59	2.08	13.30

R.I.C.

FY 86 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLS

ANALYTE: ENDRN
DETECTION LIMIT: 0.2 UGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
30	3	0	0%	LT DL	LT DL	LT DL
31	3	0	0%	LT DL	LT DL	LT DL
32	3	0	0%	LT DL	LT DL	LT DL
33	2	0	0%	LT DL	LT DL	LT DL
34	3	0	0%	LT DL	LT DL	LT DL
35	3	1	33%	*	LT DL	3.43
1	3	1	33%	*	LT DL	LT DL
2	3	1	33%	*	LT DL	0.21
3	3	3	100%	0.63	0.28	1.07
4	3	2	67%	*	LT DL	1.67
5	2	1	50%	*	LT DL	1.70
6	3	2	67%	*	LT DL	4.48
7	3	2	67%	*	LT DL	2.32
8	3	2	67%	*	LT DL	1.94
9	2	2	100%	1.30	1.08	1.51
10	3	2	67%	*	LT DL	1.48
11	3	2	67%	*	LT DL	0.54
12	1	1	100%	0.25	0.25	0.25
13	3	2	67%	*	LT DL	0.54
14	3	2	67%	*	LT DL	0.30
15	3	2	67%	*	LT DL	0.30
16	2	0	0%	LT DL	LT DL	LT DL
17	3	0	0%	LT DL	LT DL	LT DL
18	4	0	0%	LT DL	LT DL	LT DL
19	3	0	0%	LT DL	LT DL	LT DL
20	3	0	0%	LT DL	LT DL	LT DL
21	3	0	0%	LT DL	LT DL	LT DL
22	3	0	0%	LT DL	LT DL	LT DL
23	2	0	0%	LT DL	LT DL	LT DL
24	3	0	0%	LT DL	LT DL	LT DL
25	3	0	0%	LT DL	LT DL	LT DL
26	1	0	0%	LT DL	LT DL	LT DL
27	3	0	0%	LT DL	LT DL	LT DL
28	2	0	0%	LT DL	LT DL	LT DL
29	3	0	0%	LT DL	LT DL	LT DL

R.I.C.

FY 87 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLS

ANALYTE: ENDRN
DETECTION LIMIT: 0.2 UGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
30	4	0	0%	LT DL	LT DL	LT DL
31	4	0	0%	LT DL	LT DL	LT DL
32	4	0	0%	LT DL	LT DL	LT DL
33	4	0	0%	LT DL	LT DL	LT DL
34	4	0	0%	LT DL	LT DL	LT DL
35	4	0	0%	LT DL	LT DL	LT DL
1	4	1	25%	*	LT DL	1.66
2	4	0	0%	LT DL	LT DL	LT DL
3	4	2	50%	*	LT DL	0.56
4	3	2	67%	*	LT DL	1.59
5	4	1	25%	*	LT DL	1.75
6	4	4	100%	3.19	1.67	5.55
7	4	4	100%	1.96	1.62	2.48
8	4	4	100%	1.92	1.60	2.48
9	4	4	100%	1.30	0.99	1.70
10	4	4	100%	0.83	0.31	1.37
11	4	4	100%	0.50	0.44	0.5
12	4	4	100%	0.34	0.30	0.3
13	4	4	100%	0.48	0.34	0.59
14	4	4	100%	0.34	0.22	0.42
15	4	4	100%	0.29	0.22	0.40
16	4	0	0%	LT DL	LT DL	LT DL
17	4	0	0%	LT DL	LT DL	LT DL
18	4	0	0%	LT DL	LT DL	LT DL
19	4	0	0%	LT DL	LT DL	LT DL
20	3	0	0%	LT DL	LT DL	LT DL
21	3	0	0%	LT DL	LT DL	LT DL
22	3	0	0%	LT DL	LT DL	LT DL
23	3	0	0%	LT DL	LT DL	LT DL
24	3	0	0%	LT DL	LT DL	LT DL
25	3	0	0%	LT DL	LT DL	LT DL
26	3	0	0%	LT DL	LT DL	LT DL
27	3	0	0%	LT DL	LT DL	LT DL
28	3	0	0%	LT DL	LT DL	LT DL
29	3	0	0%	LT DL	LT DL	LT DL

R.I.C.

FY 87 STATISTICAL SUMMARY
NORTH BOUNDARY DEWATERING WELLS

ANALYTE: FLUORIDE
DETECTION LIMIT: 0.2 MGL

WELL NO.	TOT SAMP	SAMP >DL	% >DL	MEAN	LOW VALUE	HIGH VALUE
30	4	4	100%	4.67	4.28	5.00
31	4	4	100%	5.15	4.65	6.00
32	4	4	100%	4.52	4.20	5.00
33	4	4	100%	3.42	3.00	3.80
34	4	4	100%	3.57	2.62	4.26
35	4	4	100%	4.67	4.00	5.26
1	4	4	100%	6.85	3.58	14.70
2	4	4	100%	3.57	2.82	4.20
3	4	4	100%	3.45	2.60	4.82
4	3	3	100%	2.35	1.80	2.76
5	4	4	100%	3.43	1.80	5.87
6	4	4	100%	3.69	3.18	4.17
7	4	4	100%	2.92	2.56	3.57
8	4	4	100%	2.68	2.34	3.09
9	4	4	100%	2.37	1.90	2.81
10	4	4	100%	2.61	2.43	2.83
11	4	4	100%	2.67	1.92	3.46
12	4	4	100%	2.90	2.83	3.02
13	4	4	100%	3.02	2.61	3.68
14	4	4	100%	4.09	3.00	6.00
15	4	4	100%	3.61	2.75	5.50
16	4	4	100%	3.20	3.00	3.53
17	4	4	100%	2.90	2.58	2.93
18	4	4	100%	2.64	2.40	3.00
19	4	4	100%	1.98	1.78	2.33
20	3	3	100%	1.49	1.43	1.61
21	3	3	100%	1.34	1.29	1.41
22	3	3	100%	1.45	1.37	1.54
23	3	3	100%	1.86	1.57	2.27
24	3	3	100%	1.79	1.65	1.95
25	3	3	100%	2.01	1.75	2.41
26	3	3	100%	1.94	1.72	2.29
27	3	3	100%	1.83	1.48	2.06
28	3	3	100%	2.12	1.91	2.25
29	3	3	100%	1.52	1.47	1.57